



THE ROYAL SOCIETY  
for the Promotion  
OF HEALTH  
LIBRARY

25627

COMMONWEALTH OF AUSTRALIA

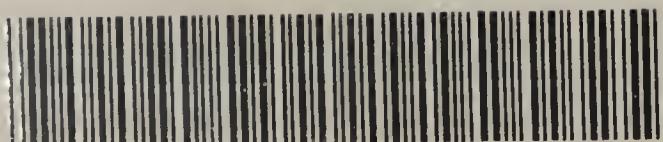


REPORT  
OF  
THE DIRECTOR-GENERAL  
OF  
HEALTH

---

1ST JULY 1960 ————— 30TH JUNE 1961

RBB | 2e



22501299047

COMMONWEALTH

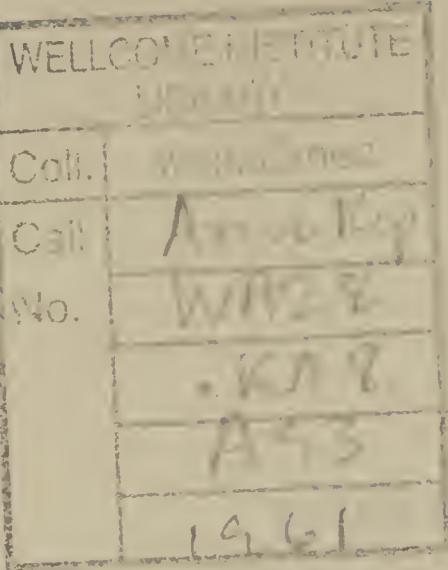


OF AUSTRALIA

REPORT  
OF  
THE DIRECTOR-GENERAL  
OF  
HEALTH

---

JULY 1, 1960 ————— JUNE 30, 1961



# COMMONWEALTH

## CENTRAL OFFICE, PARKES, CANBERRA, A.C.T.

Director-General: Major-General W. D. Refshauge, C.B.E., M.B., B.S., F.R.C.O.G.

Assistant Directors-General: Dr. H. E. Downes, M.B., B.S., D.P.H.

Dr. G. M. Redshaw, M.B., B.S., D.P.H.

R. H. D. White, O.B.E.

Senior Medical Officers: Dr. R. E. Richards, M.B., B.S., M.C.P.A.

Dr. A. Johnson, M.B., B.Ch., B.A.O., B.A., D.P.H. (Belfast).

Dr. W. F. H. Crick, M.B., B.S.

Dr. R. C. Webb, M.B., B.S., D.T.M. & H. (Chief Commonwealth Medical Officer at Australia House, London).

Dr. B. W. Royall, M.B., B.S., D.T.M. & H. (Chief Commonwealth Medical Officer, Immigration Service, The Hague, Holland).

Division of Public Health: Director, Dr. C. E. A. Cook, C.B.E., M.D., D.P.H. (Sydney), D.T.M. & H. (London).

Division of Tuberculosis: Director, Dr. Alan King, C.St.J., B.Sc., M.B., B.S., F.C.C.P.

Pharmaceutical Division: Director, R. M. W. Cunningham, Ph.C., M.P.S.

Division of Plant Quarantine: Director, Dr. T. H. J. Harrison, D.Sc.Agr. (Sydney), D.I.C. (London).

Division of Veterinary Hygiene: Director, K. S. McIntosh, B.V.Sc.

Division of Nursing: Principal, Matron F. M. Peterson.

Medical and Hospital Benefits Division: Director, A. A. M. Kelly, D.P.A., A.A.S.A.

## STATE OFFICES

**Sydney:** Erskine House, 39 York-street, Sydney, N.S.W.

Commonwealth Director of Health, Dr. L. J. Wienholt, M.B., B.S.

**Melbourne:** Commonwealth Offices, Spring-street, Melbourne, C.1, Victoria.

Commonwealth Director of Health, Dr. H. M. Franklands, M.B., B.S., D.T.M.

**Brisbane:** Commonwealth Government Offices, Anzac Square, Adelaide-street, Brisbane, Queensland.

Commonwealth Director of Health, Dr. A. H. Humphry, M.B., B.S., D.T.M. & H.

**Adelaide:** C.M.L. Building, 41-47 King William-street, Adelaide, South Australia. Commonwealth Director of Health, Dr. C. S. Barbour, M.B., B.S.

# DEPARTMENT OF HEALTH

**Perth:** 473 Wellington-street, Perth, Western Australia.

Commonwealth Director of Health, Dr. J. B. Mathieson, M.B., B.S., D.T.M.

**Hobart:** Commonwealth Offices, Stowell-avenue, Battery Point, Hobart, Tasmania.

Commonwealth Director of Health, Dr. A. M. McArthur, M.B., Ch.B., D.T.M. & H., M.C.P.A.

**Darwin:** Department of Health, Darwin, N.T.

Acting Commonwealth Director of Health, Dr. I. D. Byrne, M.B., B.S., D.T.M. & H.

## LABORATORIES AND RESEARCH ORGANIZATIONS

Commonwealth Serum Laboratories, Parkville, N.2, Victoria.

Director, R. W. Greville, M.B., B.S., B.V.Sc.

Commonwealth X-ray and Radium Laboratory, Surry-place, Melbourne, C.1

Director, D. J. Stevens, B.Sc.

Commonwealth Acoustic Laboratories, Customs House, Circular Quay, Sydney, N.S.W.

Director, N. E. Murray, O.B.E., B.E., B.Sc.

Institute of Anatomy, Canberra, A.C.T.

Medical Officer-in-charge, Dr. E. H. Hipsley, M.B., B.S.

Institute of Child Health, University of Sydney, N.S.W.

Director, Professor Thomas Stapleton, M.A., D.M., M.R.C.P.

School of Public Health and Tropical Medicine, University Grounds, Sydney, N.S.W.

Director, Sir Edward Ford, Kt., O.B.E., M.D., D.P.H., D.T.M., F.R.A.C.P., F.Z.S.

Commonwealth Bureau of Dental Standards, 18 Lonsdale-street, Melbourne, C.1.

Officer-in-charge, A. R. Docking, M.Sc.

National Biological Standards Laboratory, Canberra, A.C.T.

Director, Dr. L. F. Dodson, M.B., B.S., Dip. Clin.Path., D.Phil. (Oxon).

Commonwealth Health Laboratories are located at the following centres:—

Townsville, Cairns, Rockhampton, Toowoomba, Lismore, Tamworth, Albury, Bendigo, Launceston, Hobart, Port Pirie, Kalgoorlie, Darwin, Canberra, Alice Springs.

The names listed above are those of the officers occupying the various positions at the time of publication of this Report. In several instances the officer concerned assumed the position either during or since the period covered by the Report, the officer formerly occupying the position having either retired or taken up other duties.



## CONTENTS

	PAGE.
<b>Introduction . . . . .</b>	7
<b>National Health Benefits . . . . .</b>	9
Hospital Benefits . . . . .	9
Medical Benefits . . . . .	10
Pensioner Medical Service . . . . .	13
Pharmaceutical Benefits . . . . .	14
<b>Tuberculosis . . . . .</b>	30
<b>Public Health . . . . .</b>	36
Immigration Medical Service . . . . .	37
National Fitness . . . . .	38
Nursing . . . . .	40
Institute of Anatomy . . . . .	40
Nutrition . . . . .	41
Therapeutic Substances . . . . .	42
Epidemiology . . . . .	43
Broadcasting and Television . . . . .	47
<b>Medical Research and Teaching Institutions . . . . .</b>	49
National Health and Medical Research Council . . . . .	49
School of Public Health and Tropical Medicine . . . . .	51
Institute of Child Health . . . . .	59
<b>Quarantine . . . . .</b>	63
Animal Quarantine and Veterinary Hygiene . . . . .	63
Human Quarantine and Marine Hygiene . . . . .	66
Plant Quarantine . . . . .	69
<b>Territory Health . . . . .</b>	72
Australian Capital Territory . . . . .	72
Northern Territory . . . . .	76
<b>Commonwealth Laboratories . . . . .</b>	84
Commonwealth Serum Laboratories . . . . .	84
Commonwealth X-ray and Radium Laboratory . . . . .	94
Commonwealth Acoustic Laboratories . . . . .	107
Commonwealth Bureau of Dental Standards . . . . .	110
National Biological Standards Laboratory . . . . .	112
Commonwealth Health Laboratories . . . . .	113
<b>World Health Organization . . . . .</b>	115
<b>Commonwealth Grants . . . . .</b>	117
Red Cross Blood Transfusion Service . . . . .	117
Royal Flying Doctor Service of Australia . . . . .	117
Home Nursing Subsidies . . . . .	117
Free Milk for School Children . . . . .	118
Mental Institutions . . . . .	118



# COMMONWEALTH DEPARTMENT OF HEALTH

## REPORT FOR THE PERIOD FROM 1st JULY, 1960, TO 30th JUNE, 1961

THIS Report deals in detail with the activities of the Commonwealth Department of Health for the year ending 30th June, 1961. During all but two months of this year the Department was under the guidance of Major-General William Dudley Refshauge, C.B.E., M.B., B.S., F.R.C.O.G. who succeeded Dr. Arthur John Metcalfe, C.B.E., M.B., Ch.M., D.P.H. as Director-General on 1st September, 1960.

Hitherto this Report has been published at intervals of two years. It is proposed that it should be published annually in future.

An important change in the structure of the Department was involved in the decision, approved by Parliament in the *Commonwealth Serum Laboratories Act* 1961, to transfer control of the Commonwealth Serum Laboratories from the Department of Health to a Commission of five members, one of whom shall be the Director of the Laboratories. Arrangements for the transfer of control to the Commission, which has now taken place, were in hand when this Report was being prepared.

No major outbreak of communicable disease occurred during the period, although 12,847 cases of infectious hepatitis were notified during the twelve months, compared with 6,148 in 1959-60, representing a two-fold increase. This increased prevalence was general throughout Australia. Commonwealth and State Health authorities individually and co-operatively enjoined on the public, and especially the parents of children, the need for scrupulous cleanliness in personal hygiene. Little could be done to give general protection against the disease in the absence of a prophylactic vaccine. The Commonwealth is closely watching research in this field both in Australia and overseas in the hope that such a vaccine may be developed. Encouraging progress has already been made in isolating the hepatitis virus.

One hundred and seventy-six cases of poliomyelitis were notified during the year and six others awaited confirmation. This compared with 86 confirmed cases in the year 1959-60.

There was a general expansion in the National Health Schemes during the period, and the research and related activities carried out in the Department's specialist laboratories were pursued vigorously. These are described in the subsequent pages of this Report.

Expenditure by the Commonwealth under the Pharmaceutical Benefits Scheme increased by £3,500,000 over that for the year 1959-60, to a total of £27,900,000. This was attributable principally to the increased number of prescriptions written due to population increases and the addition of new drugs, some of which are very expensive, plus a constantly widening utilization of the Scheme.

The national drive against tuberculosis continued effectively, but it was evident that if the campaign is to achieve the eventual eradication of the disease, no opportunity must be lost to stimulate public co-operation. This can be encouraged by public health services, the voluntary organizations and the medical profession and its ancillary branches.



## NATIONAL HEALTH BENEFITS

The various benefits and services covered by the National Health Scheme are—

- Hospital Benefits.
- Medical Benefits.
- Pensioner Medical Service.
- Pharmaceutical Benefits.

The *National Health Act 1953-1961* provides for the Medical Benefits Scheme, the Hospital Benefits Scheme, the Pensioner Medical Service, and the Pharmaceutical Benefits Scheme.

Table I on page 16 sets out the total Commonwealth expenditure on these activities for each year since 1st July, 1945. Tables II to XIII on pages 17 to 28 show detailed statistics regarding each of the various benefits.

## MEDICAL AND HOSPITAL BENEFITS SCHEMES

The basic features of the Medical and Hospital Benefits Schemes remained unchanged during the year. Details of the methods and conditions of payment have been given in previous Reports and are summarized hereunder.

### HOSPITAL BENEFITS

Commonwealth hospital benefits comprise two kinds, commonly known as Ordinary Hospital Benefit and Additional Hospital Benefit. Commonwealth Ordinary hospital benefit is provided for patients in public and approved private hospitals in Australia by way of deduction from the patient's hospital account. Commonwealth Additional hospital benefit is payable only to persons who are contributors to registered hospital benefits organizations.

The benefits payable are—

Ordinary hospital benefit (paid directly to the States and private hospitals and deducted from the hospital account).	8s. per day for each day of hospitalization in a public hospital or an approved private hospital. 12s. per day for each day of hospitalization in a public hospital (other than a State benevolent home) for patients who are enrolled in the Pensioner Medical Service and who are not insured in a registered hospital benefits organization.
Additional hospital benefit (paid through registered organizations).	4s. per day to contributors who are insured for a Fund benefit of at least 6s. per day but less than 16s. per day. 12s. per day to contributors who are insured for a Fund benefit of at least 16s. per day.

In addition to the Commonwealth hospital benefits the registered hospital benefits organizations pay, subject to their rules, Fund benefits which vary according to the rate of contribution paid by the contributor but are at least 6s. per day.

**Developments in the Hospital Benefits Scheme:** The Hospital Benefits Scheme has continued to develop during 1960-61. A comparison of membership and benefit payments is given below to illustrate the growth of the Scheme since the first full year (1952-53) in which the Commonwealth Additional Benefit was paid—

			As at 30th June, 1961.	As at 30th June, 1953.
Membership	..	..	3,044,060	1,500,000
Coverage	..	..	7,500,000	3,413,000
Per cent. of population covered	..	..	72 per cent.	39 per cent.
Payments—			1960-61	1952-53
Commonwealth—			£	£
Ordinary hospital benefit	..	..	9,592,984	6,579,659
Additional hospital benefit	..	..	8,940,722	643,582
Special Account payments	..	..	2,134,304	Nil
Fund benefits	..	..	14,148,788	1,246,115

Further details of membership and coverage are given in Table III. Particulars of payments of Commonwealth benefits are given in Table II and of Fund benefits in Table IV.

Two additional organizations were registered for the payment of Commonwealth Additional hospital benefit during the year, and the registration of one other was cancelled at its own request.

During the calendar year 1960 higher charges for accommodation in public hospitals were introduced at different dates by the States. As a result most registered hospital benefits organizations have introduced new tables offering higher Fund benefits, generally of up to 60s. per day. Contributors to such tables are afforded a benefit coverage ranging up to 80s. per day taking into account the Commonwealth Ordinary and Additional hospital benefits totalling 20s. for each day of hospitalization. This benefit coverage is in most cases equivalent to the new charge for intermediate ward accommodation in public hospitals. Some organizations have introduced still higher tables also to afford private ward coverage to those of their contributors who desire it. By and large the new public ward charges were covered by existing tables.

## MEDICAL BENEFITS

Commonwealth medical benefits are paid only to financial contributors to medical benefits organizations registered under the National Health Act.

The benefits are paid through registered medical benefits organizations. Benefits range from 6s. for minor services to £22 10s. for major operations, and are paid for medical services rendered by or on behalf of registered medical practitioners at rates specified in the First and Second Schedules to the National Health Act.

In addition to the Commonwealth Medical Benefit, the registered medical benefits organizations pay, subject to their rules, Fund benefits generally at least matching the First Schedule to the National Health Act.

**Developments in the Medical Benefits Scheme:** The Medical Benefits Scheme also continued to develop and to increase in popularity with the general public. A comparison of membership and benefit payments between the years 1960-61 and 1953-54 (the first full year of operation of the Scheme) illustrates this development—

—		As at 30th June, 1961.	As at 30th June, 1954.
Membership .. .. .. ..		2,850,073	1,358,337
Coverage .. .. .. ..		7,173,000	3,502,100
Per cent. of population covered .. .. .. ..		68 per cent. 1960-61 £	39 per cent. 1953-54 £
<b>Payments—</b>			
Commonwealth benefits .. .. .. ..		9,783,423	1,434,166
Special Account payments .. .. .. ..		192,731	Nil
Fund benefits .. .. .. ..		13,566,177	1,464,413

Further details of membership and coverage are given in Table V. Particulars of payments of Fund benefits are given in Table VI.

The foremost problem dealt with during the year in connexion with the Medical Benefits Scheme was the question of the conditions of eligibility to receive Commonwealth medical benefits. To be eligible a person must be a contributor to a registered medical benefits organization. The term "contributor" is defined in section 13 (1.) of the National Health Act. Briefly, it means a person who by reason of contributions paid to a registered medical benefits organization is entitled, subject to its rules, to Fund benefits at least equal, in range and amounts, to the Commonwealth benefits specified in the First Schedule to the National Health Act.

The previous Report dealt with the amendments to the First and Second Schedules to the Act which were made by Act No. 72 of 1959. Those amendments increased the Commonwealth benefits for a number of services including some in the First Schedule. Special provision was therefore made to ensure that contributors to old tables of Fund benefits linked to the superseded Commonwealth Schedules would not be rendered ineligible for Commonwealth benefits.

Subsequently, the National Health Act was amended by Act No. 16 of 1961 to provide that, in future, the test of eligibility for Commonwealth Benefit at any given time is membership of a table of Fund benefits at least matching, in range and amounts, the benefits specified in the Commonwealth First Schedule in force at the time the person became a contributor to that table.

Section 16 (1.) (e) of the Act was also amended to incorporate the formula for assessing Commonwealth Medical benefits where three or more operations are performed on the one occasion and the Commonwealth benefit specified for each individual operation is not the same. The amendment made no difference to the amount of Commonwealth benefit which would otherwise have been payable.

Authority is given in section 15A of the Act for the Minister for Health to determine a Commonwealth benefit for a medical service which is not specified in the Schedules to the Act. The advance of medical science and the development of new surgical techniques has led to the making of over 130 such determinations since the section was inserted in the Act in 1956. During the year ended 30th June, 1961, 24 such determinations were made. These will be incorporated as items in the Schedules when the opportunity arises.

**Special Accounts System:** The history, purpose and method of operation of the Special Accounts system were given in detail in the Report for 1958-1960. The majority of contributors belong to registered medical and hospital benefits organizations which have established Special Accounts. It is not mandatory on any organization to establish a Special Account, but the approval of the Minister for Health is necessary if it wishes to do so. The statistics in respect of Special Accounts indicate that the system has proved beneficial to many contributors who have received Fund benefits which they would not have received otherwise.

The following table sets out the membership of Special Accounts as at 30th June, 1961:—

—	Medical Funds.	Hospital Funds.
Membership .. ..	21,629	317,184
Per cent. of overall membership .. ..	0.8 per cent.	10.4 per cent.

The basic idea of the system is that, in consideration of the organizations paying certain Fund benefits on claims which would otherwise be debarred by reason of pre-existing ailments, maximum benefit or chronic illness rules, the Commonwealth undertakes to reimburse the organization for any resultant losses incurred in the operation of the Special Accounts. During the year 1960-61 reimbursements of deficits and advance payments against estimated deficits totalled £192,731 in the case of medical fund Special Accounts and £2,134,304 in the case of hospital fund Special Accounts.

As mentioned in the previous Report, the National Health Act was amended in 1959 to provide for the payment of hospital fund Special Account benefits in respect of patients in hospitals not recognized for Special Account purposes where—

- (a) the patient was suffering from an illness or injury requiring treatment of a kind provided in recognized public hospitals; and
- (b) the treatment provided was of a standard substantially equivalent to that which he would have received at a recognized public hospital.

During 1960-61 a total of 1,226 cases received consideration under this provision and hospital fund Special Account benefit was authorized in full in 921 cases and in part in 69 cases.

During the year, the provision which limits the combined Commonwealth and Fund benefits for Special Account contributors to the amount of the hospital charge was liberalized to permit extra charges being taken into account. These extra charges are those made by a hospital in addition to fees for hospital treatment, by way of theatre fees or charges for drugs, dressings (including plaster), or special nursing or laundry services incurred by the patient during his period of hospitalization.

**Commonwealth Health Insurance Council:** The relations between the Department and the registered organizations have continued to be both cordial and co-operative. The Commonwealth Health Insurance Council comprising representatives of registered organizations, with the Director-General of Health as Chairman, met in Canberra on 15th and 16th November, 1960, and considered a large agenda of questions connected with the Schemes.

**Legislation:** The National Health Act was amended during the year by Act No. 16 of 1961 which received the Royal Assent on 11th May, 1961. The main amendments which affected the Medical and Hospital Benefits Schemes were as follows:—

- (a) An amendment was made to section 13 (1.) which assured the right of certain contributors to continue to receive Commonwealth medical benefits.
- (b) Section 16, which specifies the Commonwealth medical benefits payable in cases of multiple operations, was amended to provide for cases where three or more operations, attracting varying Commonwealth medical benefits, are performed.
- (c) Section 82E (1.) (i) was amended to liberalize the 100 per cent. limitation on hospital fund benefit payable to Special Account contributors.

These amendments were dealt with in more detail earlier in this section of the Report.

#### **PENSIONER MEDICAL SERVICE**

The Pensioner Medical Service commenced on 21st February, 1951, and operates under Part IV. of the *National Health Act* 1953-1961.

Under this Service, participating doctors provide medical attention of a general practitioner nature, such as is ordinarily rendered by a general practitioner in his surgery or at the patient's home, to enrolled pensioners and their dependants. A pensioner has freedom of choice as to which participating doctor he will consult.

Persons eligible for enrolment in the Service are pensioners, and their dependent wives and children, who are in receipt of—

- (a) An age, invalid or widow's pension under the Social Services Act, or a Service pension under the Repatriation Act, subject to an income means test; or
- (b) A Tuberculosis allowance under the Tuberculosis Act.

A full range of medicines is also available free of cost to enrolled pensioners and their dependants upon presentation to a chemist of a prescription written by a doctor.

The scope and application of the Service were described in previous Reports. There have been no significant developments in the Service during the year and the fees payable by the Commonwealth to participating doctors remained unaltered at 11s. for surgery consultations and 13s. for domiciliary visits.

The growth of the Pensioner Medical Service in the last ten years can be seen from the following table:—

Year Ended.	No. of Enrolled Persons (Pensioners and Dependants).	No. of Participating Doctors.	Payments to Doctors.
30th June, 1951*	432,196	2,980	£ 75,511
30th June, 1952	501,377	3,502	1,036,225
30th June, 1953	557,779	3,898	1,739,953
30th June, 1954	597,260	4,239	2,115,539
30th June, 1955	640,229	4,567	2,516,077
30th June, 1956	668,235	4,730	2,874,364
30th June, 1957	683,848	4,990	2,998,886
30th June, 1958	697,457	5,243	3,198,791
30th June, 1959	720,053	5,531	3,806,457
30th June, 1960	729,937	5,685	4,112,637
30th June, 1961	766,251	5,861	4,200,273

\* Pensioner Medical Service commenced on 21st February, 1951.

Tables VII, VIII and IX, on pages 22 to 24, relate to the operation of the Pensioner Medical Service during the years ended 30th June, 1960, and 30th June, 1961.

Details of pensioners and dependants enrolled in the Service are set out in Table VII, on page 22, while the number of participating doctors and payments to doctors for medical services and mileage are shown in Table VIII on page 23.

Table IX on page 24 gives a break-up of the types of services rendered by participating doctors and the number of mileage claims submitted.

**Committees of Inquiry:** Committees of Inquiry have been established in each State under the provisions of the National Health Act. The personnel of each Committee consists of the Commonwealth Director of Health and four medical practitioners appointed by the Minister for Health from among medical practitioners nominated by the Council of the State Branch of the British Medical Association. The function of the Committees is to inquire into and report to the Minister for Health or the Director-General of Health on any matter referred to them arising out of the services or conduct of medical practitioners in respect of the Pensioner Medical Service. During 1960-61 52 cases were referred to these Committees.

### PHARMACEUTICAL BENEFITS SCHEME

The Pharmaceutical Benefits Scheme functioned over the year without any major constitutional change. In order that advantage might be taken of the experience of the practising medical profession on the efficacy of available drugs and medicaments, an additional two medical practitioners were appointed to the Pharmaceutical Benefits Advisory Committee to assist in its deliberations on proposed additions to and deletions from the list of Pharmaceutical Benefits. This change necessitated an amendment to section 101 of the Act.

Important changes in the administration of the Scheme were—

- (a) Increases in professional fees paid to approved chemists. These were increased from 1st March from 2s. 9d. to 3s. for a ready prepared prescription and from 5s. to 5s. 6d. for an extemporaneously prepared prescription;
- (b) increased maximum quantities on a number of benefits;
- (c) lifting of the limitation on the number of items that can be written on a prescription form, and the easing of several other requirements in regard to the writing of prescriptions; and
- (d) on the recommendation of the Pharmaceutical Benefits Advisory Committee, a number of new and potent drugs were introduced, to be used only in major hospitals where all facilities for investigation and treatment are available.

During the year, the Pharmaceutical Benefits Advisory Committee recommended, and the Minister approved, the addition of 50 items to the list of benefits and the deletion of two existing benefits. Included in the additions were the anti-cholinergic group and additional tranquillizers. At the same time, some tranquillizers were made available as benefits to the general public, whereas previously they were restricted to pensioners.

Expenditure by the Commonwealth for the year increased by £3,500,000 over that for the year 1959-60 to a total of £27,900,000 (including £7,300,000 for pensioners and £3,400,000 reimbursed to approved hospitals, Bush Nursing Centres, &c.). Total payments by patients, at 5s. per prescription, amounted to £5,200,000.

The number of prescriptions represented by the above payments (excluding the £3,400,000 reimbursement to hospitals, Bush Nursing Centres, &c.) totalled 31,200,000 made up of 10,700,000 for pensioners and 20,500,000 for the general public. Over the previous year 24,600,000 prescriptions were received, representing 8,000,000 for pensioners and 16,600,000 for the general public. The increase in expenditure was attributable to an increase in professional fees paid to approved chemists as from March, 1961, the increased number of prescriptions written due to population increases and a wider utilization of the Scheme, and the addition of new drugs, some of which were very expensive.

Itemised expenditure in some of the more widely known therapeutic groups is set out below. The figures include the patients' contribution but excludes reimbursements to approved hospitals.

Drug.	Expenditure 1960-61. £
Broad spectrum antibiotics}	
Penicillins	12,486,000
Sulphonamides	
Diuretics	3,017,000
Cardiacs	1,033,000
Anti-diabetics	545,000
Anti-hypertensives	663,000
Anti-convulsants	398,000
For treatment of cancer	308,000
Corticosteroids	210,000

The remaining expenditure was on a wide variety of drugs whose usage is not so common but when combined with the above list, provide a comprehensive pharmaceutical coverage for the community at a moderate cost to the individual. Just how moderate this charge is can be illustrated by the fact that the cost of benefits provided on one prescription and for which the patient is required to pay 5s. can vary in price from £42 to 5s. The average cost per prescription is 19s.

TABLE I  
NATIONAL HEALTH  
Commonwealth Expenditure

Year Ended.	Hospital Benefits.	Medical Benefits.	Pharmaceutical Benefits.(a)	Pensioner Medical Service.	Tuberculosis including Capital).	Free Milk for School Children.	Mental Institutions.	Total.
30th June, 1946	£ 1,111,292	..	..	..	..	109,603	..	£ 1,111,292
30th June, 1947	4,380,296	..	..	..	..	27,590	..	4,489,899
30th June, 1948	4,448,015	..	..	..	..	..	..	4,475,605
30th June, 1949	5,885,446	..	..	149,037	..	151,079	..	6,185,562
30th June, 1950	6,320,164	..	..	304,689	..	757,870	..	7,638,309
30th June, 1951	6,535,628	..	..	2,930,163	75,511	2,682,749	35,775	12,665,490
30th June, 1952	6,683,106	..	..	7,685,046	1,036,225	4,613,154	814,806	21,350,117
30th June, 1953	7,223,241	..	..	..	7,215,309	1,739,953	1,521,394	522,552
30th June, 1954	8,330,053	..	..	1,434,166	9,229,413	2,115,539	1,999,312	24,390,738
30th June, 1955	9,320,603	..	..	4,209,495	10,739,467	2,516,077	2,237,425	30,562,446
30th June, 1956	9,552,944	..	..	5,413,320	11,887,434	2,874,364	2,405,349	(b) 225,585
30th June, 1957	9,813,283	..	..	6,146,029	11,716,825	2,998,886	8,596,624	36,615,380
30th June, 1958	10,823,096	..	..	7,085,524	15,033,989	3,198,791	7,908,464	773,149
30th June, 1959	14,802,290	..	..	14,972,797	3,806,457	2,405,255	2,405,349	40,360,815
30th June, 1960	18,599,245	..	..	9,291,706	24,335,671	4,112,637	2,607,040	43,126,819
30th June, 1961	20,668,010	..	..	9,976,154	27,881,222	4,200,273	2,755,602	48,061,865
								727,242
								72,548,853

(a) The amounts shown in this column include some minor expenditure under departmental votes.  
*Institutions Benefits Act 1948.*

(b) Payments up to 30th June, 1955, were made under the *Mental*

TABLE II

**HOSPITAL BENEFITS**  
**Commonwealth Expenditure**

Year Ended.	Ordinary Benefit.		Total Ordinary Benefit (Public and Private Hospitals).	Additional Benefit.(c)	Payments Towards Special Account Deficits.	Grand Total (Common- wealth Ordinary Benefit, Additional Benefit and Payments Towards Special Account Deficits).
	8s. per day.	12s. per day (South Australian Part IV. Hospitals).				
30th June, 1946	£ (a) 912,848	£ ..	£ 912,848	£ 198,444	£ 1,111,292	£ 1,111,292
30th June, 1947	.. (a) 3,502,614	..	3,502,614	877,682	4,380,296	4,380,296
30th June, 1948	.. (a) 3,433,790	..	3,433,790	1,014,225	4,448,015	4,448,015
30th June, 1949	.. (a) 4,561,202	..	4,561,202	1,324,244	5,885,446	5,885,446
30th June, 1950	.. (a) 4,762,431	..	4,762,431	1,557,733	6,320,164	6,320,164
30th June, 1951	.. (a) 4,915,202	..	4,915,202	1,620,426	6,535,628	6,535,628
30th June, 1952	.. (a) 4,997,876	..	4,997,876	1,642,522	6,640,398	6,683,106
30th June, 1953	.. (a) 4,186,144	80,441	653,976	4,920,561	1,659,098	7,223,241
30th June, 1954	.. (a) 4,197,570	95,882	1,136,460	5,429,912	1,768,856	8,330,053
30th June, 1955	.. (a) 4,598,496	103,405	1,252,998	5,954,899	1,852,609	9,320,603
30th June, 1956	.. (a) 4,551,223	105,012	1,377,303	6,033,538	1,880,692	9,552,944
30th June, 1957	.. (a) 4,314,566	131,443	1,546,932	5,992,941	1,980,222	9,813,283
30th June, 1958	.. (a) 4,201,007	139,984	1,620,737	5,961,728	2,029,424	10,823,096
30th June, 1959	.. (a) 4,680,741	145,542	1,653,849	6,480,132	2,167,151	14,802,290
30th June, 1960	.. (a) 5,527,778	146,283	1,363,354	7,037,415	2,409,490	18,599,245
30th June, 1961	.. (b) 5,411,873	169,189	(b) 1,284,188	6,865,250	2,727,734	20,668,010

(a) 6s. per day up to 30th June, 1948.

(b) Figure subject to revision.

(c) Figures in this column do not include payments towards Special Account deficits.

TABLE III  
HOSPITAL BENEFITS  
Number of Registered Organizations, Membership, and Coverage as at 30th June, 1960 and 30th June, 1961

State.	Number of Registered Organizations.		Membership.		Estimated Coverage (including Dependents).		Percentage of Population Covered.	
	As at 30th June, 1960.	As at 30th June, 1961.	As at 30th June, 1960.	As at 30th June, 1961.	As at 30th June, 1960.	As at 30th June, 1961.	Per cent.	Per cent.
New South Wales	..	..	30	1,161,017	1,189,756	2,762,000	2,808,000	72
Victoria	..	..	47	768,773	860,323	2,088,000	2,313,000	73
Queensland	..	..	3	322,689	311,409	804,000	779,000	55
South Australia	..	..	14	293,747	314,793	706,000	740,000	76
Western Australia	..	..	11	244,111	257,992	574,000	605,000	79
Tasmania	..	..	10	117,653	109,787	274,000	255,000	77
Commonwealth	..	..	115	2,907,990	3,044,060	7,208,000	7,500,000	72

TABLE IV  
HOSPITAL BENEFITS

## Fund Benefit Statistics for years ended 30th June, 1960 and 30th June, 1961

TABLE V  
MEDICAL BENEFITS  
Number of Registered Organizations, Membership, and Coverage as at 30th June, 1960 and 30th June, 1961

State.	Number of Organizations.		Membership.		Estimated Coverage (including Dependents).		Percentage Population Covered.	
	As at 30th June, 1960.		As at 30th June, 1961.		As at 30th June, 1960.		As at 30th June, 1961.	
New South Wales	..	..	26	1,161,017	1,210,614	3,164,000	2,842,000	82
Victoria	..	..	23	768,773	753,096	1,909,000	2,126,000	72
Queensland	..	..	6	322,689	296,582	814,000	765,000	72
South Australia	..	..	9	293,747	273,778	653,000	687,000	52
Western Australia	..	..	9	244,111	216,891	526,000	523,000	68
Tasmania	..	..	10	117,653	99,112	245,000	230,000	70
Commonwealth	..	..	83	83	2,907,990	2,850,073	7,311,000	72
							7,173,000	68

NOTE.—Membership figures represent the total of the individual organizations' membership figures as supplied to the Department of Health by the organizations. It is believed that the apparent fall in the total membership from 30th June, 1960 to 30th June, 1961, actually represents an effect of an alteration in the method of estimating membership by one of the largest organizations.

TABLE VI  
MEDICAL BENEFITS  
Fund Benefit Statistics for Years ended 30th June, 1960 and 30th June, 1961

Services received—(Fee-for-service and Contract).		Services received—Fee-for-service only.		Percentage of Total Cost met by—		Average No. of Services per Contributor.		Fund Benefit paid.	
State.	No. of Services.	Total Cost.	Fund.	Common-wealth.	Con-tributor.	Year Ended 30th June, 1960.	Year Ended 30th June, 1961.	Year Ended 30th June, 1960.	Year Ended 30th June, 1961.
		Percentage of G.P. Services to Total Services.	1959-1960. 1960. 1961.	1959-1960. 1960. 1961.	1960-1961. 1961.	1959-1960. 1960. 1961.	1959-1960. 1961.	1960-1961. 1961.	1960-1961. 1961.
New South Wales ..	7,938,952	£ 8,369,871	£ 71	£ 14,130,457	£ 15,754,816	36.0	37.2	26.7	37.3
Victoria ..	4,929,790	£ 5,078,882	79	£ 7,840,325	£ 8,919,367	29.7	30.2	28.0	42.3
Queensland ..	2,345,294	£ 2,204,442	74	£ 3,561,664	£ 3,544,798	38.5	40.2	29.6	28.8
South Australia ..	2,069,741	£ 2,139,080	75	£ 3,043,383	£ 3,554,400	38.7	38.1	31.8	29.8
Western Australia ..	1,784,036	£ 1,702,750	73	£ 2,606,914	£ 2,756,462	40.2	39.3	31.9	30.7
Tasmania ..	557,168	£ 628,002	65	£ 918,734	£ 1,090,970	37.1	39.6	26.9	36.0
Commonwealth ..	19,624,981	£ 20,123,027	75	£ 32,101,477	£ 35,620,813	35.4	36.0	28.2	27.4

TABLE VII  
**PENSIONER MEDICAL SERVICE**  
 Pensioners and Dependents Enrolled in the Pensioner Medical Service as at 30th June, 1960 and 30th June, 1961

State.	1959-60.		1960-61.		Total Number of Pensioners and Dependents Enrolled.	
	Number of Pensions and Allowances Current.	Pensioners Enrolled (including Pensioner Wives).	Total Number of Pensioners and Dependents Enrolled.	Number of Pensions and Allowances Current.	Pensioners Enrolled (including Pensioner Wives).	
New South Wales	290,192	260,657	294,954	300,742	269,963	305,484
Victoria	177,693	153,503	173,183	188,849	161,812	186,010
Queensland	108,123	101,459	130,343	117,902	107,286	127,578
South Australia	64,454	57,886	64,945	69,221	60,394	67,759
Western Australia	51,926	44,638	50,670	54,827	46,625	52,926
Tasmania	23,105	21,667	25,468	24,161	22,135	26,018
Northern Territory	624	334	374	1,143	425	476
Commonwealth	716,117	640,144	739,937	756,845	668,640	766,251

Figures for the Australian Capital Territory included in those shown for New South Wales.

TABLE VIII  
PENSIONER MEDICAL SERVICE  
Payments to Participating Doctors for Years ended 30th June, 1960 and 30th June, 1961

State.	1959-60.			1960-61.		
	Number of Participating Doctors.	Payments to Doctors.		Number of Participating Doctors.	Payments to Doctors.	
		Medical Services.	Mileage.		Medical Services.	Mileage.
New South Wales	2,223	1,859,576	16,341	1,875,917	2,297	1,873,575
Victoria	1,665	963,080	15,301	978,381	1,732	988,159
Queensland	715	516,456	5,344	521,800	744	540,497
South Australia	502	356,544	4,166	360,710	517	361,483
Western Australia	424	273,635	368	274,503	414	284,078
Tasmania	151	94,312	5,883	100,195	152	101,131
Northern Territory	5	1,016	115	1,131	5	1,051
Commonwealth	5,685	4,064,619	48,018	4,112,637	5,861	4,149,974
						50,299
						4,200,273

Australian Capital Territory figures included in those shown for New South Wales.

TABLE IX  
PENSIONER MEDICAL SERVICE  
Number of Services and Mileage Claims for Years ended 30th June, 1960 and 30th June, 1961

State.	1959-60.			1960-61.		
	Surgery.	Domiciliary.	Total.	Number of Mileage Claims.	Number of Services.	Total.
New South Wales	1,735,310	1,397,959	3,133,269	16,454	1,761,915	3,167,420
Victoria	799,720	805,462	1,605,182	13,313	827,117	1,648,316
Queensland	561,818	321,173	882,991	5,588	587,992	922,325
South Australia	279,594	311,997	591,591	4,153	282,525	599,597
Western Australia	287,874	176,364	464,238	916	300,096	485,259
Tasmania	98,260	61,975	160,235	4,994	105,241	185,163
Northern Territory	810	880	1,690	158	998	66,544
Commonwealth	3,763,386	3,075,810	6,839,196	45,576	3,865,884	3,130,589
						6,996,473
						46,246

Australian Capital Territory figures are included in those shown for New South Wales.

TABLE X  
PHARMACEUTICAL BENEFITS EXPENDITURE

State.	Cost of Benefit Prescriptions.						Total Commonwealth Payment for Prescriptions.	
	Total Cost.		For Population Excluding Pensioners.		For Pensioners.			
	1959-60.	1960-61.	1959-60.	1960-61.	1959-60.	1960-61.		
New South Wales	9,507,381	12,302,606	7,930,859	9,052,182	379,440	2,114,647	6,937,535	
Victoria	6,433,240	8,028,669	5,643,552	6,365,996	256,045	1,376,316	5,387,507	
Queensland	2,975,931	3,959,767	2,436,281	2,882,650	133,087	708,422	2,174,228	
South Australia	1,937,224	2,645,713	1,605,818	1,983,620	84,015	484,199	1,521,803	
Western Australia	1,459,854	1,947,471	1,208,025	1,448,308	65,368	340,245	1,142,657	
Tasmania	563,374	757,741	478,246	570,862	27,423	138,541	450,823	
Commonwealth	22,877,004	29,641,967	19,302,781	22,303,618	945,378	5,162,370	18,357,403	
							17,141,248	
							3,574,223	
							7,338,349	
							21,931,626	
							24,479,597	

\* Patient contribution commenced 1st March, 1960.

NOTE.—Australian Capital Territory figures included in New South Wales. Northern Territory figures included in South Australia.

TABLE XI  
PHARMACEUTICAL BENEFITS PRESCRIPTIONS

State.	Number of Benefit Prescriptions.				Average Cost per Benefit Prescription.			
	Total.		For Population Excluding Pensioners.		For All Prescriptions.		For Population Excluding Pensioners.	
	1959-60.	1960-61.	1959-60.	1960-61.	1959-60.	1960-61.	1959-60.	1960-61.
New South Wales	10,442,109	13,188,911	6,846,804	8,381,840	3,595,305	4,807,071	18 2	18 8
Victoria	6,325,727	7,727,184	4,622,717	5,442,499	1,703,010	2,284,685	20 4	20 9
Queensland	3,416,071	4,506,406	2,157,586	2,809,918	1,258,485	1,696,488	17 5	17 7
South Australia	2,212,265	2,889,138	1,482,298	1,937,899	729,967	951,239	17 6	18 4
Western Australia	1,642,001	2,086,513	1,081,810	1,359,355	560,191	727,158	17 9	18 8
Tasmania	615,137	818,483	433,127	557,554	182,010	260,929	18 4	18 6
Commonwealth	24,653,310	31,216,635	16,624,342	20,489,065	8,028,968	10,727,570	18 7	19 0
							23 3	21 9
							8 11	13 8

NOTE.—Australian Capital Territory figures are included in New South Wales. Northern Territory figures are included in South Australia.

TABLE XII  
**PHARMACEUTICAL BENEFITS**  
**Payments to Hospitals, Bush Nursing Centres, Flying Doctor Services and Miscellaneous**

Period.	Expenditure.					
	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Australian Capital Territory.
Twelve months ended 30th June, 1960	£ 730,430		£ 702,164		£ 383,427	£ 188,965
Twelve months ended 30th June, 1961	..	892,418	1,310,000	594,896	255,397	207,692

NOTE.—The amounts shown under the heading "Australian Capital Territory" are in respect of Bush Nursing Centres, Royal Flying Doctor Service and miscellaneous services located in various parts of Australia. The amounts shown under the various State headings are in respect of payments to hospitals only.

TABLE XIII  
**PHARMACEUTICAL BENEFITS**  
**Drugs Dispensed by Chemists**  
**Distribution by Therapeutic Categories**  
(Benefits dispensed in hospitals are excluded)

Therapeutic Category.	Percentage of Total Expenditure.		Percentage of Total Prescriptions.	
	1959-60.	1960-61.	1959-60.	1960-61.
	Per cent.	Per cent.	Per cent.	Per cent.
Broad spectrum antibiotics ..	31.3	26.6	10.6	9.8
Penicillins ..	18.9	11.8	12.2	8.5
Diuretics ..	5.1	10.3	3.6	6.1
Sulphonamides ..	5.9	4.2	8.1	5.5
Analgesics ..	1.6	3.8	3.7	7.6
Cardiacs ..	4.9	3.6	8.9	5.4
Anti-hypertensives ..	2.4	2.3	2.0	1.9
Tranquillizers ..	..	2.1	..	2.2
Anti-convulsants ..	1.5	1.4	1.5	1.1
Vitamins ..	0.9	1.3	1.3	2.3
Urinary antiseptics ..	1.3	1.3	1.5	1.3
Insulins ..	1.6	1.2	0.9	0.3
Sex hormones ..	0.6	1.0	0.3	0.4
Corticosteroids ..	0.7	0.7	0.2	0.2
Other drugs ..	23.3	28.4	45.2	47.4

Tranquillizers were added to the list of benefits from 1st November, 1960.

TABLE XIV  
**FREE MILK FOR SCHOOL CHILDREN**

State.	Number of Children.*	Payments.	
		As at 30th June, 1961.	1960-61.
New South Wales ..	580,000	£	1,276,750
Victoria ..	421,000		1,018,369
Queensland ..	244,200		516,936
South Australia ..	175,000		281,173
Western Australia ..	124,000		224,052
Tasmania ..	56,300		196,786
Australian Capital Territory ..	10,000		24,064
Northern Territory ..	9,000		21,994
Total ..	1,619,500		3,560,124

\* These figures represent the approximate number of school children eligible to participate in the Free Milk Scheme.

TABLE XV  
*States Grants (Mental Institutions) Act 1955.*

STATES' EXPENDITURE AND COMMONWEALTH GRANTS

	1955-56.	1956-57.	1957-58.	1958-59.	1959-60.	1960-61.	Total.
New South Wales—							
State Expenditure	626,290	1,150,666	972,455	590,492	1,077,181	1,298,642	5,715,726
Commonwealth Grant	208,763	383,555	324,152	196,831	359,060	432,881	1,905,242
Victoria—							
State Expenditure	1,337,239	1,581,639	1,636,095	1,858,754	1,554,812	251,462	8,220,001
Commonwealth Grant	445,746	527,213	545,365	619,585	518,271	83,820	2,740,000
Queensland							
State Expenditure	199,764	264,203	342,311	355,536	223,839	292,926	1,678,579
Commonwealth Grant	66,588	88,068	114,104	118,512	74,613	97,642	559,527
South Australia—							
State Expenditure	36,735	385,400	456,476	366,983	275,310	137,073	1,657,977
Commonwealth Grant	12,245	128,467	152,158	122,328	91,770	45,691	552,659
Western Australia—							
State Expenditure	29,953	155,565	87,709	51,631	110,397	45,827	481,082
Commonwealth Grant	9,985	51,855	29,236	17,210	36,799	15,276	160,361
Tasmania—							
State Expenditure	89,467	206,923	274,151	137,677	200,984	155,797	1,064,999
Commonwealth Grant	29,822	68,974	91,384	45,892	66,995	51,932	354,999
Total—							
State Expenditure	2,319,448	3,744,396	3,769,197	3,361,073	3,442,523	2,181,727	18,818,364
Commonwealth Grant	773,149	1,248,132	1,256,399	1,120,358	1,147,508	727,242	6,272,788

## TUBERCULOSIS DIVISION

The national campaign against tuberculosis in Australia has developed steadily as a result of the *Tuberculosis Act* 1948.

It was fortunate that the signing of the agreements (called "Arrangements" to conform with the terminology of the Act) with the States during 1949 and 1950 coincided with the introduction of newer methods of tuberculosis control.

The first of these, mass miniature radiography, is the most practicable method of searching out from amongst the apparently healthy members of the community, sufferers with infectious tuberculosis. With the commencement of mass miniature radiography in Queensland during 1960, this method is now used throughout the Commonwealth. Attendance at mass chest X-ray surveys is compulsory in all States except Victoria.

Careful planning has resulted in the provision of the additional hospital beds, chest clinics, laboratories and mobile chest X-ray units, needed to implement the necessary control steps in the different States.

In May, 1961, the new chest clinic in Pulteney-street, Adelaide, was opened, and plans have been approved for a similar development in Brisbane.

The following table of annual reimbursement to the States under the *Tuberculosis Act*, shows in general the progress of the campaign; most capital projects have been completed, maintenance reimbursements, and payments for tuberculosis allowances are now decreasing in amount; and the annual expenditure is now £3,000,000 less than the peak year of 1956-57:—

**EXPENDITURE REIMBURSED TO STATES UNDER TUBERCULOSIS ACT 1948  
TO 30TH JUNE, 1961**

Period.				Capital Reimbursements.	Maintenance Reimbursements.	Allowances Paid to Sufferers.	Total.
1949-50	..	..	..	236,179	346,142	..	582,321
1950-51	..	..	..	404,600	943,554	1,344,891	2,693,045
1951-52	..	..	..	645,131	2,114,291	1,777,620	4,537,042
1952-53	..	..	..	1,163,439	2,982,321	1,907,945	6,053,705
1953-54	..	..	..	1,295,476	3,738,885	1,876,582	6,910,943
1954-55	..	..	..	1,710,812	3,800,578	1,904,467	7,415,857
1955-56	..	..	..	1,747,722	4,050,581	1,689,774	7,488,077
1956-57	..	..	..	2,378,647	4,805,003	1,460,650	8,644,300
1957-58	..	..	..	2,128,462	4,569,215	1,254,693	7,952,370
1958-59	..	..	..	1,411,062	4,844,106	1,062,609	7,317,770
1959-60	..	..	..	729,236	4,376,256	1,025,473	6,130,965
1960-61	..	..	..	388,018	4,236,687	946,446	5,571,151
Total	..	..	..	14,238,784	40,807,619	16,251,150	71,297,553

**Tuberculosis Allowance:** The keystone of the Australian national drive remains the provision of free hospital treatment and the special tuberculosis allowance for needy sufferers.

In line with increases in the cost of living and with pension adjustments generally, the rates of tuberculosis allowance (which first commenced 13th July, 1950) were again raised on 6th October, 1960, the increased rates being—

						£	s.	d.
Sufferer with dependent wife .. .. .. .. .. ..	..	..	..	..	..	11	12	6
Sufferer with dependent child or children only .. .. .. .. .. ..	..	..	..	..	..	7	2	6
Sufferer without dependants—								
when not in an institution .. .. .. .. .. ..	..	..	..	..	..	7	2	6
when maintained in an institution free of charge .. .. .. .. .. ..	..	..	..	..	..	5	0	0
Allowance for children under sixteen years old .. .. .. .. .. ..	..	..	..	..	..	10	0	

The number of persons in receipt of the allowance decreased still further, and on 31st December, 1960, stood at 2,235, the progressive reduction being—

1951 .. .. .. .. .. ..	6,548	1956 .. .. .. .. ..	4,182
1952 .. .. .. .. .. ..	6,127	1957 .. .. .. .. ..	3,326
1953 .. .. .. .. .. ..	5,696	1958 .. .. .. .. ..	2,750
1954 .. .. .. .. .. ..	5,742	1959 .. .. .. .. ..	2,503
1955 .. .. .. .. .. ..	5,029	1960 .. .. .. .. ..	2,235

**Prevention:** B.C.G. vaccine is still being used for its preventative value on an Australia-wide basis for contacts of known cases of tuberculosis, and for persons at risk, such as medical students and nurses; but its use for negative tuberculin reactors in school children has been abandoned in those States in which tuberculosis control is more advanced and which are considered to be low-prevalence areas.

A newer development now being introduced into the prophylactic field is the use of anti-tuberculosis drugs before disease has actually developed.

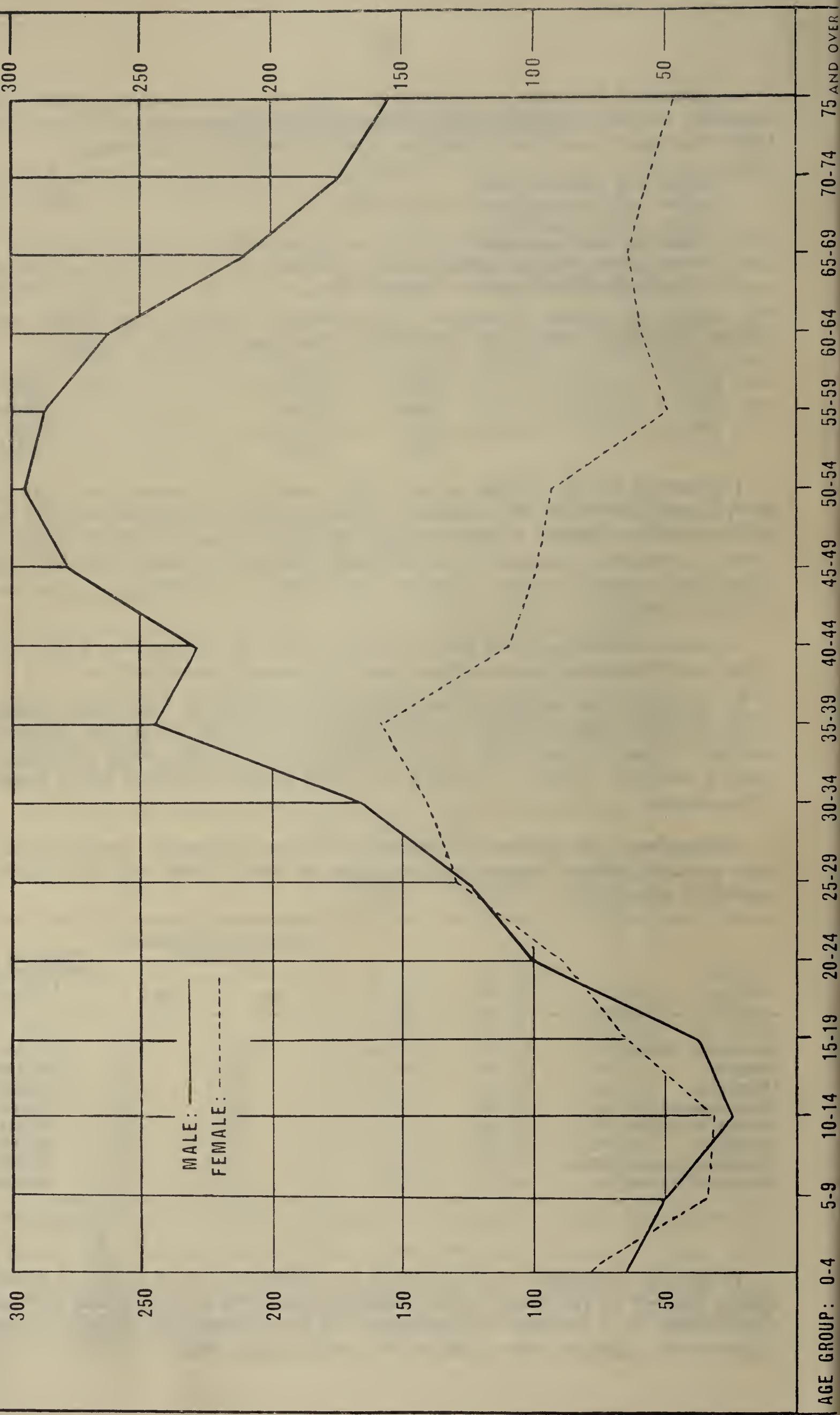
In Australia this method is beginning to be applied to individuals, mainly children, whose only evidence of infection is a positive tuberculin reaction. Isoniazid is usually given alone in appropriate dosage to those with particularly marked reactions, whom it is known are more prone to develop active tuberculous disease.

**Notifications:** The incidence of pulmonary disease as shown by annual notifications probably reflects increasing case finding by some States, and the level of control in others—

	Notifications of Pulmonary Tuberculosis.		Population 31st December, 1960.
	1959.	1960.	
New South Wales .. .. .. .. .. ..	1,033	1,337	3,872,809
Victoria .. .. .. .. .. ..	733	750	2,925,533
Queensland .. .. .. .. .. ..	647	737	1,466,879
South Australia .. .. .. .. .. ..	240	255	956,939
Western Australia .. .. .. .. .. ..	335	318	740,245
Tasmania .. .. .. .. .. ..	131	94	359,789
Australian Capital Territory .. .. .. .. .. ..	8	15	55,272
Northern Territory .. .. .. .. .. ..	33	50	20,704
Total .. .. .. .. .. ..	3,160	3,556	10,398,170

Progressive indication of the position by notification of all forms of tuberculosis has not as yet shown any sustained reduction in incidence, and no true appreciation of a decrease in incidence will be possible till all States have achieved the maximum effort possible in a control programme.

INCIDENCE OF TUBERCULOSIS BY AGE GROUPS • AUSTRALIA - 1960  
NOTIFICATIONS



Year.			Number of Notifications of Tuberculosis—All Forms.	Population.	Rate per 100,000.
1949	..	..	3,914	8,045,570	49
1950	..	..	4,491	8,307,841	54
1951	..	..	4,675	8,527,907	55
1952	..	..	4,786	8,739,569	55
1953	..	..	4,979	8,902,686	56
1954	..	..	4,952	9,090,395	54
1955	..	..	4,602	9,313,291	49
1956	..	..	4,419	9,533,334	46
1957	..	..	4,035	9,747,471	41
1958	..	..	3,708	9,951,618	37
1959	..	..	3,582	10,166,173	35
1960	..	..	4,084	10,398,170	39

**Epidemiology:** Studies in the epidemiological pattern of tuberculosis in Australia confirm the fact that the disease is twice as common in men as in women, and that in men it is more common in the upper age groups. Tuberculin surveys and results of case finding surveys suggest that, as would be expected, there is a higher incidence of disease in migrants.

Case Registers are not as yet current in all States, but from available records the prevalence of the disease in the community would appear to be between 300 and 400 per 100,000 of the population.

**Mass Miniature Radiography:** The number of sufferers disclosed per medium of mass photofluorography varies from .5 per 1,000 in New South Wales, .75 per 1,000 in Western Australia to 2 per 1,000 in Queensland, the latter being an initial finding.

The frequency with which community surveys are repeated varies somewhat in the States, generally between two and five years, depending on the local indications.

The present findings suggest this method of case detection is still an economic proposition, and "by products" in the discovery of other pulmonary pathology, heart disease and cancer of the lung are by no means insignificant.

Although radiation hazards are considered to be no more than infinitesimal when compared to the benefits obtained from mass radiography, all care is now taken with equipment in regard to filtration and restriction of the X-ray beam to ensure the fullest protection of technical staff, as well as the public.

Some newer developments in regard to 70 mm. mirror-camera X-ray units, have greatly increased the technical efficiency of this case finding method, and some re-equipment of apparatus used by the States is in progress to take advantage of this improvement.

State.	Number Examined.	Number Active T.B.	Rate per 1,000.	Number In-active T.B.	Rate per 1,000.	Suspect Active T.B. at 31st December, 1960.	Rate per 1,000.	
New South Wales*	..	609,383	204	0.33*	3,306	5.42	290	0.47
Victoria†..	..	393,498	194	0.49	1,188	3.01	..	..
South Australia ..	..	120,492	88	0.73	2,919	24.0	..	..
Queensland‡ ..	..	158,023	370	2.34	1,268	8.02	41	0.26
Western Australia§ ..	..	36,329	26	0.71	10	0.27	6	0.16
Tasmania ..	..	110,355	56	0.5	108	0.97	256	2.3

\* Adjusted finding would be in vicinity of .5 per 1,000. † Voluntary surveys only. ‡ First survey—country districts only. § Numbers reduced due to interval between second and third metropolitan survey. || Includes suspect active at 31st December, 1960.

**Treatment:** The modern use of the effective drugs, Streptomycin, P.A.S. and Isoniazid, which render most patients suffering from pulmonary tuberculosis, non-infectious within three months, has become one of the most important public health measures in the control of tuberculosis; particularly since the advent of the last of these, Isoniazid, in 1952, and has been one of the main factors in the reduction in the number receiving allowances; as well as reducing the demand for hospital beds. Patients must continue taking the drugs for a period of eighteen months to two years to prevent relapse of the disease, so that one of the features of tuberculosis control now is the supervision of patients undergoing ambulatory treatment.

The beds in use for tuberculous patients in Australia at 30th June, 1961 (including Repatriation beds) were 3,729, distributed in the following numbers in the different States:—

New South Wales	..	..	..	..	..	..	1,328
Queensland	..	..	..	..	..	..	780
Victoria ..	..	..	..	..	..	..	815
South Australia ..	..	..	..	..	..	..	305
Western Australia	..	..	..	..	..	..	289
Tasmania ..	..	..	..	..	..	..	212

**Drug Resistance:** One of the features of new cases discovered is the small percentage of patients estimated at 2%-3% in some States, found to be excreting tubercle bacilli resistant to one or other of the three standard drugs (primary drug resistance) and a similar percentage in Western Australia and Queensland infected with an atypical organism slightly different from the tuberculosis germ and also somewhat resistant to treatment.

Some patients who have been previously treated and whose disease has deteriorated, also present with drug resistant organisms (secondary drug resistance) and must be treated with "second line" drugs not so effective such as Pyrazinamide, Cycloserine and Viomycin.

A new drug, however, Ethionomide, is now showing some promise, and will certainly join the second line armamentarium.

**Mortality:** The marked fall in the annual death rate, in 1960 to the record low figure for Australia of just under 5 per 100,000 undoubtedly is due to the strength of the national drive against the disease—

Year.	Deaths from Tuberculosis, All Forms.	Population.	Death Rate per 100,000.
1949	1,964	8,045,570	24.3
1950	1,675	8,307,841	20.18
1951	1,538	8,527,907	18.03
1952	1,290	8,739,569	14.76
1953	974	8,902,686	10.94
1954	897	9,090,395	9.86
1955	729	9,313,291	7.82
1956	724	9,533,334	7.59
1957	585	9,747,471	6.00
1958	538	9,951,618	5.4
1959	549	10,166,173	5.4
1960	489	10,398,170	4.70

**Constant Reappraisal of Problem:**—The need of reappraising the extent of the problem of tuberculosis in Australia is being constantly kept in mind. In this regard the Commonwealth is also advised by the National Tuberculosis Advisory Council which comprises the State Directors, the Senior Chest Specialist of the Repatriation Commission and representatives of the private practising medical profession. The eleventh session of the Council was held in Canberra in November, 1960, and reviewed technical factors, holding a special session with representative Commonwealth and State bacteriologists, to review laboratory methods used in diagnosis, treatment and control.

Given stable social conditions, the campaign against tuberculosis should still become increasingly effective, but if the national drive for the eventual eradication of tuberculosis is to succeed, it will be important to stimulate community health education so as to obtain the fullest co-operation from members of the public health services, the voluntary organizations, the medical profession and its ancillary branches.

## PUBLIC HEALTH DIVISION

**Food Additives and Food Standards:** Further incidental additives were approved for use in the confectionery industry and one colour was added to the list of Approved Food Colours.

Work is continuing on the drafting of model standards for food.

**Committee in Preventive Medicine in General Practice:** This Committee was originally the Committee in Preventive Medicine of the Australian College of General Practitioners. At the 50th meeting of the National Health and Medical Research Council, it was adopted as the Committee in Preventive Medicine in General Practice. This ensures that the Council will have a direct line of communication with the general practitioners and the connecting link will be the Director of the Public Health Division, who is convener of this committee.

**Poisons Register:** Work has commenced on the preparation of a Poisons Register, on the lines of the Canadian Manual, and States are expected, in the near future, to set up Poison Control Centres. The Commonwealth Department of Health will act as a national clearing house for Poison Control Centres and will issue copies of the Register to States when work on its assembly is completed.

**Desiccated Coconut:** Dr. C. E. Cook, Director of the Public Health Division, visited Ceylon in April, 1961, and discussed standards required to be met by millers and shippers exporting desiccated coconut to Australia. The Ceylon Coconut Board has undertaken to ensure that all shipments of desiccated coconut to Australia are certified as having been bacteriologically checked and found to be free from pathogenic organisms, and that consignments will be branded to identify the mill of origin.

**National Morbidity Survey:** A survey is being carried out by members of the Australian College of General Practitioners, in association with the Medical Statistics Committee of the National Health and Medical Research Council.

A trial project over a three-month period was completed on 30th April, 1961, during which the record card and documentation were tested. It is proposed to commence the survey proper on 1st February, 1962, in which approximately 100 doctors will record every sickness episode which they attend throughout a period of twelve months.

**Traffic Injury Research Committee:** At the request of the Public Health Committee the National Health and Medical Research Council set up a committee to investigate traffic accidents and injuries, and to prepare a form for the uniform recording of accident data. The first meeting was held on 26th-27th June, 1961.

**Medical Record of Birth (Tasmania):** The State Department of Health and the medical profession in Tasmania are co-operating in a study involving detailed medical records of birth, which are being completed for every pregnancy of 20 weeks duration or more, whether the child is born alive or is stillborn.

The objectives are particularly directed towards research into the causes of stillbirth and prematurity.

When the Bureau of Census and Statistics has completed machining of the data, the Public Health Division of the Commonwealth Department of Health will prepare tables and statistical analyses for further study by medical authorities in Tasmania. This work will be carried out immediately after the completion of a twelve month period of recording, that is after 31st August, 1961.

**Longitudinal Survey:** The longitudinal type of study involves careful follow up of a group of "healthy" persons with well defined social characteristics, in whom the emergence of disease may be closely observed and its presentation recorded in detail, in proper relation to biological and external environmental factors which may be involved in—

- (a) causation
- (b) rate of development, and in
- (c) the possibility of reversion.

There is thus a wide field of research and experimentation in which a longitudinal survey has an important role. In the study of many diseases, particularly degenerative conditions such as the cardiovascular group of illnesses, and in the study of the process of ageing, it is necessary to observe a selected cohort of the population over a period of many years.

Such a project could be carried out by members of the Australian College of General Practitioners and the College, at the annual meeting in Brisbane in 1959, indicated its desire to give the survey full support in collaboration with the Commonwealth Department of Health and the National Health and Medical Research Council. Each participating doctor would—

- (a) conduct an initial, exhaustive, clinical examination on four persons;
- (b) examine these subjects annually, but less exhaustively; and
- (c) keep, in considerable detail, clinical records of any illnesses sustained by his four patients during the 12 months' interval between the annual, "official", check-ups.

The present objective is to build up a group of at least 2000 survey subjects. For convenience, husbands and wives would be preferred as each would have a personal interest in the health of the other and this might ensure better continuity prospects and less survey wastage. All occupational groups, nationalities, and as many geographical areas as possible, will be represented. The first step will involve enlisting the co-operation of approximately 500 interested general practitioners.

## IMMIGRATION MEDICAL SERVICE

The Department continued to conduct the Hospitals of the Immigration Medical Service in Migrant Centres controlled by the Department of Immigration.

Two hospitals with 281 beds, cots and bassinettes (ten at Woodside and 271 at Bonegilla) and three hospitals (out-patient facilities only) were available for use in the period under review.

The number of migrants accommodated in the Centres varied from 3,009 in July, 1960, to 3,118 in June, 1961. The minimum number accommodated was 1,857 in September, 1960, and the maximum number was 3,626 in May, 1961. The average monthly number of migrants accommodated for the year was 2,639.

A total of 1,146 in-patients covering 7,826 bed days were treated and 30,235 out-patients attendances were recorded. 436 infectious cases were treated and 1,711 immunizations were effected.

Ninety-two babies were born in local hospitals to Centre residents and eleven babies were born in Centre hospitals.

Staff figures at the commencement and end of the period were—

			1st July, 1960.	30th June, 1961.
Medical Officers ..	..	..	1	1
Matron and Nurses ..	..	..	12	10
Orderlies ..	..	..	23	28
Other ..	..	..	36	29

## NATIONAL FITNESS MOVEMENT

### ADMINISTRATION

The administration of the National Fitness Movement was carried out on the same lines as in previous years with the Commonwealth providing a central administration and the activities in the States centering around the State National Fitness Councils, the State Departments of Education and one University in each State.

### FINANCE

The Commonwealth Government again appropriated the sum of £72,500 for National Fitness activities during the year. This supplemented assistance given to National Fitness agencies in the States by State instrumentalities.

The Commonwealth appropriation was allocated to—

	£
State National Fitness Councils ..	36,954
State Education Departments ..	17,000
Universities ..	12,400
Central Administration ..	3,396
Australian Capital Territory ..	2,750
	<hr/> 72,500

### STATE NATIONAL FITNESS COUNCILS

State Councils continued their State-wide activities in the fields of youth leadership training, assistance to youth and amateur sports organizations, the extension and conducting of camps and youth hostels, assistance in the conduct of holiday play centres and the running of swimming classes and schools.

Details of the allocation of £36,954 from the National Fitness Fund to State National Fitness Councils are set out in the following table:—

Item.	New South Wales.	Victoria.	Queens- land.	South Australia.	Western Australia.	Tasmania.
	£	£	£	£	£	£
1. Salaries and travelling expenses, Director and Assistant Director ..	1,750	1,750	1,500	1,500	1,500	1,500
2. Services to Associated Groups ..	2,000	2,000	1,500	1,500	1,500	1,500
3. Grants to voluntary Youth Organizations ..	500	500	438	438	438	258
4. Subsidies to local National Fitness Committees ..	750	750	654	654	654	384
5. Services to sports organizations ..	243	243	150	150	150	100
6. Development of Camps and Hostels	2,000	2,000	1,500	1,500	1,500	1,500
Totals .. .. ..	7,243	7,243	5,742	5,742	5,742	5,242

## STATE EDUCATION DEPARTMENTS

The programmes in State Education Departments financed from the National Fitness Fund again provided for special instruction for teachers, the organization of school camps, the provision of bursaries for teachers and of materials for book and film libraries and teaching aids.

The Commonwealth allocation of £17,000 to State Education Departments from the National Fitness Fund during the year comprised—

Item.	New South Wales.	Victoria.	Queens-land.	South Australia.	Western Australia.	Tasmania.
	£	£	£	£	£	£
1. Training of general teachers in physical education—						
(a) Short courses .. ..	500	500	500	300	300	300
(b) Residential courses ..	500	500	500	500	500	500
2. Provision of bursaries to enable selected teachers to undertake university courses .. ..	..	..	..	600	600	600
3. Development of health and physical education in practising schools and Teachers' Colleges—						
(a) Equipment .. ..	300	300	300	200	200	200
(b) Camps for Teachers' college students .. ..	250	250	250	150	150	150
4. Publications, films, records, &c. ..	484	484	483	483	483	483
5. Development of school camping and hostelling—						
(a) Equipment of camps and schools .. ..	500	500	500	400	400	400
(b) School camping, hostelling	300	300	300	200	200	200
Totals .. ..	2,834	2,834	2,833	2,833	2,833	2,833

## UNIVERSITIES

Through their courses in physical education the Universities continued to provide the trained personnel necessary to impart instruction and train others in physical education.

The sum of £2,100 was again paid from the National Fitness Fund to each of the Universities of Melbourne, Queensland, Adelaide and Western Australia and the sum of £2,000 each was paid to the Universities of Sydney and Tasmania.

## AUSTRALIAN CAPITAL TERRITORY

As in the past direct financial assistance from the National Fitness Fund was given to youth organizations and amateur sporting bodies for specific projects coming within the scope of National Fitness activities. Funds were also provided to assist in meeting the cost of instruction in physical education and promoting a physical recreation programme for young people in the Australian Capital Territory. Financial assistance was given to the Department of the Interior to conduct holiday play centres.

## NURSING

### COLOMBO PLAN—TECHNICAL CO-OPERATION SCHEME

**Graduate Nurses:** During the year, eighteen graduate nurses completed either post-graduate, post-certificate, or *ad hoc* courses in Australia, and 23 commenced courses. At 30th June, 1961, 22 were still undergoing studies in Australia in one or other of the nursing specialities. These nurses came from the following countries:—Burma, India, North Borneo, Pakistan, Philippines, Sarawak, Singapore and Thailand.

**Undergraduate Nurses:** Sixty-one nurses completed a three-year basic course (Malaya 42, Ceylon 19) and returned to their own countries during the year. Three girls from Malaya commenced a basic nursing course. Arrangements are being made to place in hospitals another 57 Malayan girls for a three-year course. At 30th June, 1961, seventeen nurses were still undergoing basic nursing courses. (Malaya 12 and Ceylon 5.)

**World Health Organization Nursing Fellowships:** During the year three graduate nurses were awarded Fellowships under the sponsorship of the World Health Organization for post-graduate or *ad hoc* studies in Australia. These nurses came from India, Indonesia and Jordan.

**Home Nursing Subsidy Scheme:** Commonwealth subsidy was granted to three district nursing organizations during the year. The total subsidy paid to the various district nursing organizations during the year was £78,014. This subsidy permitted the employment of approximately 112 trained nurses.

## INSTITUTE OF ANATOMY

The Australian Institute of Anatomy, which is situated in Canberra, was established by the Commonwealth Government under the *Australian Institute of Anatomy Agreement Act 1924-1933* to house the collection of specimens of the fauna of Australia donated by the late Sir Colin MacKenzie.

Many people think of it primarily as the attractive-looking building which houses the heart of the great Australian racehorse, Phar Lap. Its exhibits, however, are of much wider interest to persons of scientific bent. Over the years, the Institute has built up a remarkable and very valuable collection of Australian anatomical specimens, dealing with man as well as native animals, accompanied by informative and educational displays. The work of identifying and cataloguing these items, and arranging their effective presentation, so that students and others interested may study them, keeps an experienced staff constantly engaged.

With the generous voluntary assistance of Mr. S. R. Mitchell of Melbourne, an authority on aboriginal stone implements the extensive collections of these at the Institute have now been put in order.

Revised permanent displays of aboriginal culture were arranged depicting the provision of shelter, the use of fire, techniques of hunting, fishing and food gathering, and types of boomerangs and their uses.

Largely due to the generosity of Lady Winifred MacKenzie, widow of the late Sir Colin MacKenzie, a former director of the Institute, the courtyard has been re-modelled to include an ornamental pool with a miniature waterfall, flowering and ornamental trees and shrubs and stone seats. The grassed area

has been replaced by deep gravel beds. A life-sized platypus modelled by Mr. Ian Mackay, a member of the Institute's staff, is being cast in bronze, and will be positioned near the waterfall. The model represents an animal about to enter the water and the surroundings give the impression of a natural Australian setting.

With the co-operation of the Mitchell Library (N.S.W.) which made available the papers of the late Dr. Herbert Basedow, who in 1909 was appointed Protector of Aborigines of South Australia (which also included the present Northern Territory), most of the large Basedow collection of photographic negatives purchased by the Commonwealth Government have been printed, identified and catalogued.

The travelling exhibit on Dental Health was loaned for display in Newcastle and Leichhardt.

## NUTRITION

The bi-monthly publication "Food and Nutrition Notes and Reviews" has been produced as for the past seventeen years. Revision of the booklets "Tables and Composition of Australian Foods" and "Notes on Special Diets" was completed and copies will be available for distribution early in 1962. A booklet "Eat Better for Less" was prepared and widely distributed throughout Australia.

A new set of Dietary Allowances has been drawn up and adopted by the National Health and Medical Research Council.

A study of diet and activity patterns of a group of Canberra women in the second and third trimesters of pregnancy and 6-8 weeks post-partum (to include both lactating and non-lactating women in this last period) has been progressing. This study is expected to provide useful information in respect of nutrient increments during pregnancy and lactation.

A symposium on Dietary Allowances was arranged by the Nutrition Section as part of the ANZAAS meeting held in Brisbane in May, 1961. Papers were delivered by members of the staff on the subjects of "Problems Related to the Compilation of Dietary Allowances" and "Dietary Allowances for Lactating Women".

## METABOLIC STUDIES

A study was commenced of the levels of non-esterified fatty acids (NEFA) in the plasma of pregnant and non-pregnant women. It is now thought by most people that NEFA which are carried in the blood linked to the albumin molecules are the main chemical compounds responsible for transporting energy from the stores in the body to the sites at which the energy is utilised. The study confirmed reports previously published by others that the NEFA levels are considerably elevated during pregnancy. The purpose of this is not known but these differences in NEFA levels once again emphasise the remarkable metabolic changes that occur in the blood and most other organs of the body during pregnancy.

During the year 1960-61 techniques have been set up to study energy expenditure in physical activity. These are in preparation for a study of energy intake and expenditure which will be made during 1962 at Kundiawa in New Guinea in co-operation with the Nutrition Research Section of the Department of Health, Territory of Papua and New Guinea.

These techniques involve the use of a Wolff Integrating Motor Pneumotachograph (which is a newly developed instrument for the measurement of energy expenditure by indirect calorimetry) a Scholander gas-analysis apparatus, and log-book methods for recording dietary intakes and the physical activities of individuals.

## PUBLICATIONS

FOOD AND NUTRITION NOTES AND REVIEWS, Vol. 17, 1960, Nos. 7-12.

IBID, Vol. 18, 1961, Nos. 1-6.

(Published by the Commonwealth Department of Health.)

THE EFFECTS OF HEAT ON COOKING FATS, N. E. Kirk, *Food and Nutrition Notes and Reviews*, Vol. 18, 1961, p. 3.

HUNGER AND APPETITE AND THE MAINTENANCE OF BALANCE BETWEEN ENERGY INTAKE AND EXPENDITURE, E. H. Hipsley, *Food and Nutrition Notes and Reviews*, Vol. 18, 1961, p. 33.

SERUM PROTEIN LEVELS IN MOTHERS AND NEW-BORN INFANTS—A COMPARISON OF NEW GUINEANS WITH WHITE AUSTRALIANS, E. H. Hipsley, J. Kariks, *Med. J. Aust.*, Vol. 1, p. 853.

## THERAPEUTIC SUBSTANCES

### THERAPEUTIC SUBSTANCES ACT AND REGULATIONS

The Therapeutic Substances Act and Regulations came into operation in 1956 for the purpose of controlling standards of therapeutic substances imported into Australia, traded interstate or exported from Australia in accordance with the standards fixed by the British Pharmacopoeia, the British Pharmaceutical Codex or by Regulation. Provisions of the Act and Regulations also apply to the standards of therapeutic substances supplied in the form of pharmaceutical benefits and to the Commonwealth Government.

In accordance with the provisions of the Therapeutic Substances Act and Regulations a number of samples were obtained and submitted for analysis by the official testing laboratories, viz. the Department of Pharmacology laboratories at the Universities of Sydney and Melbourne, the Commonwealth Serum Laboratories, and Laboratories controlled by the Department of Customs and Excise.

The number of samples tested during the year was increased considerably mainly due to the activity of the National Biological Standards Laboratory and a summary of the results of the tests conducted by the N.B.S.L. will be found under the appropriate heading. The samples tested consisted of goods which were imported into Australia, goods supplied to the Commonwealth Government and those supplied in the form of pharmaceutical benefits.

## EPIDEMIOLOGY

The following information in respect of the year under review has been collated from information received from State Health Authorities:—

TABLE I

**Diseases Notifiable in each State and Territory of Australia and Number of Cases Reported during the Year Ended 31st December, 1960**

Disease.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.	N.T.	A.C.T.	Aust.
Acute Rheumatism	63	91	126	2	14	6	4	1	307
Amoebiasis	*	1	3	2	10	..	1	1	18
Ancylostomiasis	78	..	82	..	..	..	298	..	458
Anthrax	*	4	..	..	..	..	..	..	4
Bilharziasis	*	..	..	..	..	..	..	..	..
Breast Abscess	11	56	1	*	*	*	*	1	139
Brucellosis	8	17	..	..	7	1	..	..	33
Chorea	7	8	..	..	3	*	1	..	19
Dengue	..	..	1	..	..	*	..	..	1
Diarrhoea, Infantile	288	630	175	3	30	34	318	45	1,523
Diphtheria	10	4	6	1	5	2	..	..	28
Dysentery, Bacillary	*	72	47	73	104	..	61	17	374
Encephalitis	17	22	5	26	..	..	2	2	74
Erythema Nodosum	..	20	..	2	1	..	..	1	24
Filariasis	*	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	*	1	*	..	..	*	..	..	1
Hydatid	..	21	..	1	1	15	..	..	38
Infectious Hepatitis	4,924	2,385	719	1,121	256	44	23	88	9,560
Influenza	*	*	*	12	*	*	*	*	12
Lead Poisoning	*	..	64	..	2	*	..	..	66
Leprosy	..	..	2	..	18	..	21	..	41
Leptospirosis	13	..	105	..	9	*	..	..	127
Malaria	..	8	58	1	4	1	15	1	88
Meningococcal Infection	..	62	67	30	3	4	28	5	200
Ophthalmia	*	*	*	..	67	..	..	12	79
Ornithosis	2	..	2	2	2	*	..	..	8
Paratyphoid Fever	2	1	..	1	4	2	..	..	10
Poliomyelitis	11	25	5	12	7	39	17	..	116
Puerperal Fever	56	7	29	3	1	1	3	..	100
Q Fever	*	*	255	*	*	*	*	*	255
Rubella	*	528	12	105	127	..	1	5	778
Salmonella Infection	*	*	*	72	28	*	2	6	108
Scarlet Fever	412	776	128	168	38	38	..	3	1,563
Staphylococcal Infection (Infancy)	137	117	*	*	*	*	*	*	254
Tetanus	*	10	42	3	8	*	1	..	64
Trachoma	*	..	*	..	437	*	198	..	635
Trichinosis	*	*	*	..	..	*	..	..	..
Tuberculosis	1,533	892	844	288	316	114	54	16	4,057
Typhoid Fever	7	5	7	1	1	1	4	..	26
Typhus (flea, mite or tick borne)	..	1	13	..	..	..	..	..	14

\* Not notifiable.

NOTE.—No case of cholera, smallpox, plague, epidemic typhus or yellow fever was notified.

TABLE II

**Infectious Hepatitis:** As will be seen from the table below, there has been a marked increase in the incidence of this disease during the past few years, from 5,599 in 1956 to 12,687 in 1961. The age group most affected is 5-9 years.

### INFECTIOUS HEPATITIS: CASES NOTIFIED

State.	1958.	1959.	1960.	1961.
New South Wales ..	3,262	3,183	4,924	5,840
Victoria ..	1,053	1,452	2,385	3,557
Queensland ..	469	762	719	1,029
South Australia ..	307	749	1,121	1,360
Western Australia ..	396	142	256	263
Australian Capital Territory ..	16	16	88	279
Northern Territory ..	45	53	23	55
Tasmania ..	51	21	44	304
Total Australia ..	5,599	6,378	9,560	12,687

TABLE III

### POLIOMYELITIS STATISTICS—AUSTRALIA

Showing Age and Sex, Type of Disease, 1st July, 1959, to 30th June, 1960

Age Group.	Paralytic.				Non-paralytic.		Total.	
	Respirator.		No Respirator.		Fatal.	Not Fatal.		
	Fatal.	Not Fatal.	Fatal.	Not Fatal.				
<i>Males.</i>								
0-1 ..	..	..	..	..	5	..	1 6	
1-4 ..	..	..	..	..	10	..	2 12	
5-9 ..	..	..	..	..	8	..	2 10	
10-14 ..	..	..	..	..	..	..	1 ..	
15-19 ..	..	..	..	..	1	..	.. 1	
20-24 ..	..	..	..	..	1	..	.. 1	
25-29 ..	..	1	1	1	1	..	.. 4	
30-34 ..	..	1	..	..	2	..	.. 3	
35-39 ..	..	..	..	..	2	..	.. 2	
40-44 ..	..	..	..	..	..	..	.. ..	
45 and over ..	..	..	..	..	..	..	.. ..	
Total ..	..	2	1	1	30	..	6 40	
<i>Females.</i>								
0-1 ..	..	..	..	..	1	..	.. 1	
1-4 ..	..	..	..	..	12	..	.. 12	
5-9 ..	..	..	..	..	3	..	.. 3	
10-14 ..	..	..	..	..	..	..	.. ..	
15-19 ..	..	..	..	..	..	..	.. ..	
20-24 ..	..	..	..	..	2	..	.. 2	
25-29 ..	..	..	..	..	1	..	.. 1	
30-34 ..	..	..	..	..	1	..	.. 1	
35-39 ..	..	..	..	..	..	..	.. ..	
40-44 ..	..	..	..	..	..	..	.. ..	
45 and over ..	..	..	..	..	..	..	.. ..	
Total ..	..	..	..	..	20	..	.. 20	

TABLE IV  
POLIOMYELITIS STATISTICS

Total All Persons 1955-56, 1956-57, 1957-58, 1958-59, and 1959-60

Age Group.	Number.				
	1955-56.	1956-57.	1957-58.	1958-59.	1959-60.
0- 1..	15	10	..	5	7
1- 4..	200	66	9	35	24
5- 9..	241	69	8	24	13
10-14..	167	36	1	9	1
15-19..	115	16	4	5	1
20-24..	117	34	4	4	3
25-29..	150	26	3	10	5
30-34..	114	20	4	6	4
35-39..	48	9	2	2	2
40-44..	25	2	1	2	..
45 and over	17	2	1	..	..
Not stated	11	..	..	..	..
Total	1,220	290	37	102	60

TABLE V  
POLIOMYELITIS STATISTICS  
Summary

State.	1955-56.			1956-57.			1957-58.			1958-59.			1959-60.		
	Males.	Females.	Total.												
New South Wales	175	88	263	45	37	82	13	8	21	12	18	31	6	11	17
Victoria	128	108	236	37	25	62	..	3	32	46	78	8	2	2	10
Queensland	64	42	106	18	18	36	2	1	3	1	2	3	1	1	4
South Australia	83	77	160	36	25	61	1	4	5	1	1	1	4	3	7
Western Australia	186	233	419	8	4	12	1	1	2	1	1	1	6	..	6
Tasmania	12	9	21	25	12	37	1	2	3	..	1	1	2	..	2
Australian Capital Territory	6	5	11	..	..	..	..	..	..	..	..	..	..	..	..
Northern Territory	4	..	4	..	..	..	..	..	..	..	..	..	6	8	14
Total	658	562	1,220	169	121	290	18	19	37	61	41	102	40	20	60

## BROADCASTING AND TELEVISION CENSORSHIP

The censorship of medical talks and advertisements relating to medicines, used in sound broadcasting and television, is carried out under the *Broadcasting and Television Act 1942-1961*. During the year, 1,783 commercials for broadcasting and 188 television commercials were received.

### BROADCASTING

In the censorship of radio commercials no serious problems were encountered. Some were rejected because the claims made were grossly exaggerated and several others were rejected because no precise knowledge of the method of treatment advertised was known.

During this year, consideration was given to the advertising of proprietary medicines by the National Health and Medical Research Council and this Department was asked to prepare a national code for censorship, applicable to all media. This task was to be carried out in collaboration with the Australian Association of Advertising Agencies, the Australian Association of National Advertisers, the Australian Broadcasting Control Board and the Press.

Work on the code proceeded to the stage of a fourth draft which was then circulated to industry, and to all other interested agencies and associations for comment.

At the 51st Session of the National Health and Medical Research Council in May, 1961, an *ad hoc* advisory committee was appointed under the Chairmanship of Dr. Alex Johnson, Public Health Division of this Department, to undertake the preparation of a final draft.

Of the 1,783 broadcast commercials received during the year 1,523 were approved without amendment, 137 were approved with amendment, and 123 were rejected.

The standard attained by the advertising agencies who have submitted these scripts over the past years has shown considerable improvement. There has been a large degree of co-operation between representatives of the Australian Association of Advertising Agencies, the Australian Association of National Advertisers and the Department.

### TELEVISION

Out of a total of 188 television commercials received during the year, 148 were approved, 34 were approved with amendment and six were rejected. Some of the advertising agencies submit the television commercials in the form of a "storyboard", while others submit a typed script describing the audio and video portions of the commercial and giving the full text of the statements which will be made.

### LEGISLATION

The Director-General's authority is contained in the following sections of the *Broadcasting and Television Act 1942-1961*:

Section 100 (6). A licensee shall not broadcast or televise an advertisement relating to a medicine unless the text of the proposed advertisement has been approved by the Director-General of Health, or, on appeal to the Minister under this section, by the Minister.

Section 121 (1). Except as prescribed, a person shall not broadcast or televise a talk on a medical subject unless the text thereof has been approved by the Director-General of Health, or, on appeal to the Minister under this section, by the Minister.

Departmental policy can be summed up as follows:—

- (a) Within a broad interpretation of the principles of truth and ethics, a reasonable degree of latitude is given to the advertiser, the objective being to provide a balance between his economic motives on the one hand, and the contents of, and therapeutic claims made for, his product on the other hand.
- (b) Claims for disease prevention or for "protection" against an illness or illnesses will, in future, require to be substantiated by unequivocal scientific proof. It is not consistent with current acceptable standards of ethics in patent medicine advertising for an advertiser to confuse exaggeration with a misleading and untrue statement.
- (c) A little exaggeration has, over the years, been permitted in all instances where it has been based on a definite truth and on incontrovertible facts. No scripts will be accepted for broadcast or television commercials in which claims for protection or prevention are merely selling propositions based on no, or on negligible, supporting evidence.
- (d) It is not desired to interfere unduly with the buying and selling of proprietary medicines in so far as any member of the public has a perfect right to purchase a product for self-medication if one is available. One merely wishes to ensure that he will have a fair chance of receiving the benefit which he expects to accrue from the recommended dosage.

## MEDICAL RESEARCH AND TEACHING INSTITUTIONS

### NATIONAL HEALTH AND MEDICAL RESEARCH COUNCIL

The Fifty-first Session of the National Health and Medical Research Council was held at the Commonwealth Serum Laboratories, Melbourne, on Thursday, 25th May, 1961. The following members were present: Major-General W. D. Refshauge (Chairman), Sir Edward Ford and Dr. C. E. Cook, representing the Commonwealth, Dr. C. J. Cummins, representing New South Wales, Dr. K. Brennan, representing Victoria, Dr. A. Fryberg, representing Queensland, Dr. L. Henzell, representing Western Australia, Dr. P. S. Woodruff, representing South Australia, Dr. J. Edis, representing Tasmania, Dr. R. F. R. Scragg, representing the Territory of Papua and New Guinea, Dr. W. F. Simmons, representing the Federal Council of the British Medical Association, Professor A. J. Arnott, representing the Australian Dental Association, Professor S. Sunderland, representing the Universities having Medical Schools, Professor L. Townsend, representing the Australian Regional Council of the Royal College of Obstetricians and Gynaecologists, Dr. J. G. Radford, representing the Australian College of General Practitioners, Dr. A. V. Jackson, representing the College of Pathologists of Australia, Professor V. L. Collins, representing the Australian Paediatric Association, Dr. H. J. Ham, representing the College of Radiologists of Australasia, Professor E. S. J. King, representing the Royal Australasian College of Surgeons, Dr. J. J. Billings, representing the Royal Australasian College of Physicians, Sir Norman Nock, an eminent man appointed by the Commonwealth, Miss G. N. Burbidge, an eminent woman appointed by the Commonwealth.

The Committees of the Council during 1961 included: Medical Research Advisory, Overseas Travelling Fellowships, Public Health, Epidemiology and Control of Epidemic Diseases, Tropical Physiology and Hygiene, Veterinary Public Health, Antibiotics, Medical Statistics, Medical Radiation, X-rays, Radioactive Isotopes, Radio Therapy Advisory, Occupational Health, Maternal and Child Welfare, Nutrition, Dental Research Advisory, Nursing and Ultrasonics.

*Fiftieth Session:* Held at University House, Canberra, on Thursday, 27th and Friday, 28th October, 1960. Resolutions adopted at this Session of the Council included—

*Malaria:* That in States where Malaria is notifiable the opportunity of notification should be taken to ensure that the patient receives treatment to eradicate infection.

*Infected Coconut:* (1) That in view of the finding of salmonella organisms in a number of samples of desiccated coconut, further importations of this commodity should be prohibited, unless satisfactory evidence is produced that it is manufactured under suitable hygienic conditions and is free from harmful organisms.

(2) That the Commonwealth Department of Health investigate the practical value of ethylene oxide or similar gas for the sterilization of desiccated coconut, at ports of entry into Australia.

*Venereal Diseases: Gonorrhoea.*—(1) That the necessity of taking specimens for laboratory examination prior to the commencement of treatment be emphasized to the medical profession and the medical student.

(2) That standard procedure for diagnosis of Gonorrhoea in the female should include—

- (a) the examination of smears from Vagina, Urethra and Rectum.
- (b) culture of materials from these sites,

and that State Authorities should ensure that adequate facilities for bacteriological diagnosis including culture are readily accessible.

*Non-specific Urethritis:* That the National Health and Medical Research Council extends financial support to intensive research into the causes of infective non-specific Urethritis.

*Notification:* That all States adopt and use the form of notification in current use in Queensland with substitution of the words "present condition" for the words "same complaint" in question 9.

*Treatment:* That laboratories in all States should undertake tests to ascertain the sensitivity of strains of gonococcus to Penicillin and medical practitioners should be asked to report promptly all cases failing to respond to standard Penicillin therapy.

*Tracing of Infective Source:* That in the State Venereal Diseases Acts, the penalty for discontinuing treatment before discharge should be raised to £100 or imprisonment for 6 months.

*Diagnosis for Syphilis:* That the standard of diagnosis for early Syphilis should demand—

- (a) careful clinical examination of the lesion,
- (b) dark ground examination of a smear from the lesion,
- (c) serological examination comprising a complement fixation test and any other, e.g., flocculation.

*Medical Record of Birth:* (i) That in those States where there are statutory deficiencies, the Registrar-General should be given statutory power to require any prescribed information on births and deaths, including information which is not required for the purposes of registration and which need not be recorded in the birth and death registers.

(ii) That the definition of still-born child and requirements relative to the registration thereof be deleted from appropriate Acts.

(iii) That birth be defined as follows in Birth, Deaths and Marriage Acts:—  
"Birth" and "Birth of a child" means, for the purposes of registration and reporting of particulars, the expulsion or extraction from its mother of a foetus of twenty weeks gestation or over.

(iv) That the period within which a birth is required to be registered be reduced from 60 to 30 days.

(v) That medical practitioners be required to furnish a report of every birth as in (iii) above where the foetus is born dead, or the child does not survive 28 days.

(vi) That key definitions of twenty weeks gestation and the determination of a live birth be referred to the Medical Statistics Committee and the Committee of the College of Obstetricians and Gynaecologists.

(vii) That the Medical Statistics Committee with suitable co-opted members compile the details of the report required from medical practitioners as in (v) and all States adopt this report.

*Medical Research in Australia:* (1) That a full-time Executive Officer be appointed. The Executive Officer should be a person of high academic qualifications and experience in medical research.

(2) The status of the Executive Officer should be such that he will have access through the Chairman of the Council to the responsible Minister on matters concerned with medical research.

*Ante Partum Haemorrhage:* That with the adoption of the twentieth week of gestation as the point after which a medical record of birth will be required, Ante Partum Haemorrhage shall be defined as follows:—

“Haemorrhage occurring after the twentieth week of gestation, from the first day of the last menstrual period.”

*Fifty-first Session:* Held at the Commonwealth Serum Laboratories, Melbourne, on 25th May, 1961. Resolutions adopted at this Session of the Council included—

*Desiccated Coconut:* That the Commonwealth Department of Health write to the Ceylon Coconut Board requesting an assurance that all shipments to Australia of desiccated coconut will be certified as having been produced under hygienic conditions, bacteriologically checked and found to be free from pathogenic organisms, and that consignments will be branded to identify the mill of origin.

*Traffic Injury Research:* That a sub-committee should be formed expeditiously to investigate traffic accidents.

The following were appointed:—

Dr. C. E. Cook or other officer of Department of Health.

Professor J. S. Robertson.

Dr. J. Birrell.

Dr. J. W. Lane.

Dr. J. I. Tonge.

Dr. R. A. Money (Surgeon).

*Thyroid Tablets:* That Thyroxine be used in lieu of thyroid extract in Thyroid tablets.

## SCHOOL OF PUBLIC HEALTH AND TROPICAL MEDICINE

The School of Public Health and Tropical Medicine performs the functions of Teaching, investigation, and consultation in the subjects relating to Public Health, Social and Preventive Medicine, and Tropical Medicine. The academic work of the School is under the direction of the University of Sydney, and various training, consultative and professional services are maintained by the Commonwealth Department of Health.

The main sections of the School comprise: Public Health and Preventive Medicine, Tropical Medicine, Bacteriology and Pathology, Biochemistry, Occupational Health, Environmental Health, Parasitology, Entomology and Vital Statistics.

### TEACHING ACTIVITIES

In addition to its University functions as an undergraduate department and postgraduate school of the Faculty of Medicine, the teaching activities of the School have also been directed into broader, extra-mural fields. This is in accord with Departmental policy that the School should be an educational adjunct to the

Commonwealth Health Services in maintaining and improving the Public Health. The special reasons for the items listed in the following schedule of teaching courses are generally apparent. In most cases, the School is the only institution undertaking training in subjects indicated, and it may be added that, in general, such courses would not be available, at least to the required standards, if Departmental facilities were not provided.

In the period under review, a publicly advertised course in Industrial Health for medical practitioners was made an annual feature; the School co-operated with the Faculty of Dentistry in its establishment of an annual course in Public Health Dentistry; a course in Industrial nursing, initially established and conducted by the School alone, was resumed in association with the New South Wales College of Nursing; and certain courses were commenced for the University of New South Wales.

**Postgraduate Studies:** *Diploma in Public Health* (one academic year).—Subjects comprise: Bacteriology, Parasitology, Entomology, Physiology, Biochemistry, Nutrition, Public Health Practice and Administration, Vital Statistics, Epidemiology, Maternal and Child Health, Hygiene and Sanitation, Communicable Disease Control, Occupational Health and Health Education. In 1960, ten students were enrolled and in 1961, fifteen.

*Diploma in Tropical Medicine and Hygiene* (six months).—Subjects comprise: Parasitology, Entomology, Bacteriology, Vital Statistics, Tropical Physiology, Nutrition, Tropical Medicine, Tropical Hygiene and Sanitation, Epidemiology, Communicable Disease Control, and Child Health. In 1960, eleven students enrolled and the same number enrolled in 1961.

*University Diploma courses—single subjects provided.*—

*Diploma in Dermatological Medicine:* Mycology, Entomology. *Diploma in Clinical Pathology:* Parasitology. *Diploma in Social Work:* Physical and Mental Health. *Diploma in Public Health Dentistry:* Preventive Medicine, Public Health Administration, Epidemiology, Vital Statistics (with D.P.H.).

**Undergraduate Studies:** Medicine (5th Year)—Preventive and Social Medicine (55 lectures and practical instruction). The number of students enrolled was 213 in 1960 and 219 in 1961.

Medicine (4th Year)—Helminthology.

Science (3rd Year)—Protozoology (Advanced Zoology).

Architecture (3rd Year)—Hygiene.

Engineering (3rd Year)—Industrial Hygiene and Safety.

**Miscellaneous:** Australian School of Pacific Administration—Lectures for teachers, patrol officers and others attending ASOPA courses.

**Annual Course for Industrial Medical Officers:** Arranged by public advertisement—for medical practitioners.

**Courses for Armed Services:** Army: Malaria control—local units; instruction to medical officers; to all ranks of units proceeding overseas; and to personnel as arranged. Other services—as arranged.

**Annual Non-Professional Course in Tropical Medicine and Hygiene:** Arranged by public advertisement for missionaries, planters, nurses and other residents of tropical areas: 30 lectures. Annual attendances are large—82 in 1959, 92 in 1960.

Courses in association with N.S.W. College of Nursing: *Diploma in Nursing Administration and Sister Tutors Diploma*—Public Health, Preventive Medicine and Bacteriology.

*Diploma in Industrial Nursing.*

Courses at University of New South Wales—*Diploma of Hospital Administration*—Bacteriology.

*Master in Technology* (Public Health Engineering)—Industrial Hygiene and Occupational Health Hazards.

*Technical Instruction*: As arranged for Departmental and Territorial officers, and candidates for various services and institutions.

## RESEARCH AND INVESTIGATION

**Bacteriology and Pathology:** *Leptospirosis*.—A serological survey of leptospiral infection in domestic animals, to define the animal reservoirs of this disease in New South Wales, has now been completed. The work was performed in association with the Veterinary Research Institute, Glenfield. Results have been published, in part, and a final report is in preparation.

A field party visited the Territory of Papua and New Guinea to study the epidemiology of leptospirosis in man and animals. A report is in preparation.

*Q Fever*.—Serological studies of the distribution of Q Fever in domestic animals were performed concurrently with those mentioned above in regard to leptospirosis, and will be reported.

*Histopathology of Tumours*.—The long-term study of tumours in the native population of Papua and New Guinea, which was commenced in 1957 by the establishment of a Papua-New Guinea Tumour Registry, has been continued. In this study, the School is associated with the Department of Health of the Territories, the Director of the Tumour Clinic at St. Vincent's Hospital, Sydney, and the Department of Pathology, University of Western Australia. The object is to define the pattern of benign and malignant new growths in a primitive population. The work also serves as a very useful diagnostic service for non-neoplastic, as well as neoplastic lesions.

*Medical Mycology*.—An investigation of dermatophytosis in South Australia is in progress in association with Dr. I. Donald. A further survey, of dermatophytes in native people of the British Solomon Islands, has also been commenced, in association with Dr. G. E. Hoult, of Honiara. It is planned to institute a similar survey in the Territory of Papua and New Guinea.

*Bacteriology of Sewage Effluents*.—An investigation of the incidence of *Salmonella* organisms in sewage effluents and in the environment of swimming beaches is projected. This work is to be performed in association with the Principal Medical Officer, Metropolitan Water, Sewerage and Drainage Board, Sydney.

*Serological Examination of Meat Inspectors*.—A serological investigation of brucellosis, Q fever and leptospirosis in Commonwealth Meat Inspectors, in all States, is being conducted.

**Biochemistry**: Biochemical estimations of the sera of New Guinea natives in regard to total protein and electro-phoretogram pattern is continuing in association with Dr. F. Schofield, of the Department of Public Health of Papua and New Guinea. The survey is expected to be completed in 1962.

Investigation into micro-estimation of bromine in serum and biological tissues is in progress after reappraisal of the Ucko method.

In conjunction with this project, the study of quantitation following electrophoresis of sera continues. This is a comparative study on methods of evaluation for ultimate statistical analysis.

#### Investigation of cystinurics.

The research programme had to be curtailed due to disruption of the laboratory during renovation and the above represents only work in active progress.

**Entomology: Myxomatosis and Mosquitoes.**—In the field the studies at Mt. Flora, conducted in association with the C.S.I.R.O. Wildlife Survey Section, have been restricted following the seasonal fluctuations of rabbit populations and disease incidence correlated with the availability of mosquito vectors. In the laboratory the analysis of all the experimental data relating to mosquito behaviour and meteorological conditions continues, though little time is available for this work.

An important general conclusion from the Mt. Flora studies has been that epizootics of myxomatosis depend primarily on a sufficient density of the animal host and that the vector populations are quite a secondary consideration.

**Biting Midge (Sandfly) Investigations.**—In the laboratory taxonomic studies of the Ceratopogonidae have continued as opportunity offered, but the inflow of new material has been too great to allow time for finalising previous work to the point of publication. Important material has resulted from a nightly light-trap catch provided by C.S.I.R.O.

Professor Tokunaga of Japan sent his types of some forty-odd new species of Ceratopogonidae from New Guinea for examination and comment. These were examined in relation to known Australian species and a commentary prepared which was circulated to all workers interested in this group.

The identifications of Townsville biting midges was completed by Dr. Reye during the year and a joint paper on the relation of biting midges to the transmission of arthropod-borne virus diseases in the Townsville area has been accepted for publication.

The study of biting midge breeding zones in estuaries was continued though the study area failed to produce any noticeable pest population during the season so that little progress was made. This could have been due to an unsuitable season, or to a gradual change in the habitat reducing the production potential for midges. An almost imperceptible process of siltation could have been the reason for this, and if this were so, it would indicate that the amount of reclamation required to convert breeding places into non-breeding places is of very modest proportions. Such a thesis would not be contra-indicated by the unusual character of the majority of complaints concerning biting midges received from the Sydney area during the season. Usually complaints concern the dominant pest species *Culicoides subimmaculatus* which is related to the tide cycle; this year other far less common species, dependent on rainfall rather than tides, were the basis of complaint.

**Domestic flies.**—Observations have been made to elucidate the problems of house-flies and blow-flies requiring investigation. For instance, it is now obvious that there is no positive correlation between fly populations in garbage dump areas and in domestic situations. Indeed garbage dumps are dominated by fly species which are not house visitants. There are correlations between house-fly

populations and certain agricultural pursuits such as the glass-house tomato industry. It is also obvious that although activities of man provide the breeding sites for many flies, the very wide degree of fluctuation in fly densities is almost solely a response to the vagaries of climate.

*Mosquito breeding habits.*—Precipitin tests of the blood meals of mosquitoes, to determine their feeding preferences, were continued.

## ENVIRONMENTAL HEALTH

**Preferred environmental temperature:** The inquiry into the preferred thermal environment in Australia and New Guinea, and its relation to climate and race, is proceeding. The present status of this project is as follows:—

In Sydney—analysis of results have been completed, and report will shortly be submitted for publication.

In Northern Territory—a survey has been completed, the results analysed and two papers prepared dealing with day and night comfort in Batchelor, Northern Territory.

In Macquarie Island—a paper has been prepared by Dr. G. Palmai for the Antarctic Division of the Department of External Affairs based on a study made during 1960.

A paper by Surgeon-Lieutenant D. A. Noble on thermal comfort in a small Australian warship in the tropics is awaiting completion.

**Radiant cooling:** In co-operation with the Engineering Division of C.S.I.R.O., experiments are in progress to assess physiologically the effectiveness of a method of radiant cooling to be developed as an alternative to air conditioning in tropical Australia.

## OCCUPATIONAL HEALTH

Investigations, parts of which were associated with the advisory functions of the Occupational Health Unit, were made on the following subjects:—

1. The health and working conditions of telegraphists, with special reference to nervous disorders, consequent to the introduction of the Tress System of telegraph operating.
2. Environmental and medical survey of the plant-manufacturing oxides of lead.
3. Development of a dynamic gas calibration chamber.
4. Toxic hazards in industry, including TNT and cordite at a munitions factory; dust in quarries.

## PARASITOLOGY

**Filariasis:** Investigations into the epidemiology and control of filariasis, conducted in association with the Department of Public Health of the Territory of Papua and New Guinea, were continued by Dr. B. McMillan. Field work was undertaken in September-December, 1960, and a second course of diethylcarbamazine treatment administered to the population of the control area in the Finschhafen sub-district. The control scheme has the support of the local people and microfilaremia is being kept at a very low level. The work is being maintained between visits by an officer of the Department of Public Health of the Territory. Filarial surveys were also carried out at Manus prior to the commencement of residual antimalarial spraying.

**Helminth studies:** Helminths were collected from aquatic birds at Townsville, for later study.

**Miscellaneous parasites:** Study of the blood and alimentary parasites of various animals, including bats, was continued.

### PREVENTIVE MEDICINE

Analysis of data relating to the health and development of pre-school children, in association with the Institute of Child Health and the Lady Gowrie Research Fellow.

### RADIOBIOLOGY

The work of the Radiobiological Research Unit, under the direction of Dr. P. L. T. Ilbery, is supported by the N.S.W. State Cancer Council and the Post-Graduate Medical Foundation of the University of Sydney. During this period Dr. C. E. Ford, Director of the M.R.C. Radiobiological Unit at Harwell, worked with the Unit for six months, by arrangement of the Post-Graduate Foundation.

The mechanism of the graft versus host reaction in radiation chimaerism—Evidence was found of adaptation of bone marrow, from radiation chimaeras where the donor haemopoietic tissue was of foetal origin, for both donor and host type antigen. Persistence of adaptation was tested by transplantation into a further generation of lethally irradiated host and donor type mice. Two possible explanations had to be excluded before accepting adaptation as the mechanism, both involving carrying over the graft of some host type cells. A blood forming graft of host type cells carried over with donor bone marrow was excluded by experiments involving shielding of the inguinal lymph nodes of lethally irradiated host and donor test animals. The other possibility of a blood forming transfusion of donor type cells allowing time for a small number of host type cells to proliferate and so imitate an adaptive mechanism was investigated by using donors, one parent strain of which carried a marker chromosome. When the chromosome marked embryonic donor tissue is transplanted into a lethally irradiated incompatible strain survival has so far been shown to be associated with persistence of the foreign donor graft. Current work involves retransplantation to further test animals for the purpose of seeking a cytogenetic basis for the persistence of the phenomenon on transmission to tertiary hosts.

Very low temperature storage of living cells—A liquid nitrogen refrigerator has been used to store bone marrow and tumour at  $-196^{\circ}\text{C}$ . An apparatus has been developed for the slow freezing of small quantities of these materials, and its efficiency estimated for short term storage by biological assay of stored marrow. The number of cells necessary to effect a high proportion of survival after injection of preserved and thawed marrow into lethally irradiated mice was compared with irradiated controls given fresh marrow. The results indicate that although protection of lethally irradiated mice given cells frozen by our apparatus, stored at  $-196^{\circ}\text{C}$ . and thawed quickly, can be obtained, the number of cells required is several times that needed when freshly prepared bone marrow cells are used.

As a long-term test of survival, under these conditions, tissue from radiation induced leukaemias has been stored for several months and will be tested for viability by passage in graded doses.

**Radioleukaemia:** Departures from the normal chromosome set in thymus, marrow, spleen and lymph node in radioleukaemia induced in inbred mouse strains are striking. Aberrations in number or form are commonly present. It became important to learn, therefore, if these anomalies precede the change to malignancy in radioleukaemia or if they are an expression of selective tendencies after the neoplastic event. For our purpose it has been considered that transplantability would be used as the yardstick. Thymus, spleen and lymph node from apparently normal mice that had been subjected to subacute whole body radiation were transplanted into baby mice of the same strain and 30-days-old thymectomized mice. Of 20 preleukaemic mice 13 showed a departure from normal in the cytology of thymus cells, consisting of abnormalities of the modal number or the presence of clones of altered number or form. However, with one exception where cells carrying an abnormal pattern were also present in the bone marrow, preleukaemic cells carrying abnormal chromosomes have so far failed to transplant.

**Human cytogenetics:** Help has been requested from all the teaching hospitals in the diagnosis of cases thought to bear abnormalities of the autosomes or the sex chromosomes. The Unit has assisted in the diagnosis of mongolism, in exclusion of familial mongolism and difficult cases of intersex. During the year the bone marrow technique has been superseded by a more universally applicable blood culture technique. No significant finding has developed from a study of human acute leukaemia although individually variations have been found in the form of hyperdiploid counts.

### TROPICAL MEDICINE

A field investigation of the epidemiology of leptospirosis in the Territory of Papua and New Guinea was undertaken by Dr. F. M. Willis and Mr. J. S. Wannan in 1960. Rodents, blood samples from humans and pigs, and information relevant to human behaviour were collected. A report is in preparation for publication.

Treatment with a new antiamoebic drug, Entamide furoate (Furamide), is under clinical investigation in cases of intestinal amoebiasis.

### CONSULTATIVE AND ADVISORY SERVICES

The consultative service provided by the officers of various sections on their particular subjects has been widely used by Departmental institutions and by a wide range of Commonwealth and State departments, institutions and public authorities, individual doctors and others. Inquiries have greatly increased in this period and in some sections must frequently be deferred on account of lack of staff to undertake requests requiring special surveys or investigations. Honorary consultant physicians' posts to various hospitals are also held by various staff members.

Consultative assistance has been afforded to a number of Commonwealth departments during this review period, including the Departments of Territories, Works, Postmaster-General and External Affairs. Requests for advice have also been received from the Commonwealth Public Service Board and from Territory Administrations.

The Commonwealth Health Laboratories Consultant Service, providing advice on pathology, bacteriology, biochemistry, parasitology and entomology to Commonwealth Health Laboratories, has shown a further increase in specimens received for examination. The rapidly growing importance of laboratory medicine in clinical practice has greatly increased the amount and complexity of the work

of the Health Laboratories, and ensures an increasing demand for specialist advice in these subjects. For this reason a re-organization of the Section of Biochemistry has been necessary and it is essential that Virology, at present maintained to an inadequate standard by the Section of Pathology and Bacteriology, should be more usefully represented in a special Section.

The Armed Services have maintained close liaison with the School and requests for instructional and advisory services have been received from all three. Members of the School staff serve as consultants to the Army, some as serving officers, in tropical medicine, preventive medicine, environmental health, and other subjects. The Director is on the strength of Army Headquarters as Director of Army Health. Instruction is provided to local units and to individual members, whenever possible. Assistance has also been given in special investigational projects.

Association with a wide range of health agencies, and professional, educational and community bodies is essential for maintaining useful and co-operative contact with national and community work. The Department and the School are widely represented on such bodies by the personal, and usually unofficial membership of staff members. As these are generally admitted for their professional qualifications, this necessary work tends to be particularly time-consuming for senior staff. The following are among the bodies on which representation is maintained in this way: The National Health and Medical Research Council (and its various committees); the National Radiation Advisory Committee; the Council of the Australian School of Pacific Administration; the N.S.W. Board of Health; the Health Advisory Committee to N.S.W. Minister for Health; the N.S.W. State Cancer Council; the World Health Organization (Expert Committees on Malaria, Public Health Education, Occupational Health, Vital Statistics); a wide range of University of Sydney advisory, administrative and research bodies; the Board of Social Studies; the University Extension Board; the Postgraduate Committee in Medicine; the Postgraduate Medical Foundation; the Royal Australasian College of Physicians (Research and Editorial Committees); the British Medical Association (Occupational Health Committee); The Royal Institute of Health (N.S.W. Division); the Australian Water and Sewage Treatment Association; the Royal Society of Tropical Medicine and Hygiene (local secretary); the Nuffield Fellowship Advisory Committee; the N.S.W. Ambulance Association; and various other scientific and charitable bodies and hospital boards.

## GENERAL

The Tropical Diseases Annexe in the Cameron Wing of St. Vincent's Hospital, Sydney, the establishment of which was noted in the last Annual Report, in addition to supplying a long-needed community service, is proving of great value in the clinical teaching for the current Diploma in Tropical Medicine and Hygiene course.

The installation of the climatic chamber for the Environmental Health Section by the Commonwealth Department of Works was nearing completion by the end of the period under review. This apparatus is essential for basic research in climatic physiology, which is an important function of the Section.

The re-organization and modernizing of the Biochemistry Section, which was commenced last year, has added greatly to the usefulness of the Section, especially in regard to its research capacity.

## PUBLICATIONS

LIFE HISTORY OF *Acarithoparyphium spinulosum* JOHNSTON, 1917 (Trematoda: *Echinostomatidae*). By A. J. Bearup. *Aust. J. Zool.*, 8, 1960, pp. 217-25.

INVESTIGATION OF BLOOD DONORS IN ACCIDENTAL TRANSFUSION MALARIA—*Plasmodium vivax*, *falciparum* AND *malariae* INFECTIONS. By R. H. Black. *Med. J. Aust.*, 2, 1960, pp. 446-9.

PARASITIC INFECTION IN CATS IN SYDNEY, WITH SPECIAL REFERENCE TO THE OCCURRENCE OF *Ollulanus tricuspis*. By A. J. Bearup. *Aust. Vet. J.*, 36, 1960, pp. 352-4.

CRYPTOCOCCOSIS IN THE KOALA (*Phascolarctos cinereus*). By T. C. Backhouse and A. Bolliger. *Aust. J. Sci.*, 23, 3, 1960, p. 86.

DIFFERENTIATION OF HUMAN HOOKWORM AND STRONGYLOIDES LARVAE. By A. J. Bearup. *Med. Technology*, 2, 1960, pp. 131-5.

THE INHIBITION OF LEPTOMONADS OF THE GENUS *Leishmania* IN CULTURE BY ANTIFUNGAL ANTIBODIES. By B. McMillan. *Ann. trop. Med. Parasit.*, 54, 1960, pp. 293-9.

BLOOD STUDIES ON THE ECHIDNA *Tachyglossus aculeatus*. By A. Bolliger and T. C. Backhouse. *Proc. zool. Soc. Lond.*, 135, 1960, pp. 91-7.

THE BLOOD OF THE KOALA (*Phascolarctos cinereus*). By A. Bolliger and T. C. Backhouse. *Aust. J. Zool.*, 8, 1960, pp. 363-70.

THERMAL COMFORT IN NON-TROPICAL AUSTRALIAN HOUSES. By R. K. Macpherson. *Archt. Sci. Rev.*, 3, 3, 1960, pp. 110-5.

THE LIFE AND INFLUENCE OF JOSEPH BANCROFT. By Edward Ford. *Med. J. Aust.*, 1, 1961, pp. 153-70.

LEPTOSPIRES IN THE TERRITORY OF PAPUA AND NEW GUINEA. By J. S. Wannan and M. F. Willis. (LETTERS TO THE EDITOR) *Aust. J. Sci.*, 23, 1961, p. 268.

A PHYSICIAN IN THE CONGO. By M. F. Willis. *Med. J. Aust.*, 1, 1961, 462-4.

MORBIDITY AND MORTALITY IN THE KOALA (*Phascolarctos cinereus*). By T. C. Backhouse and A. Bolliger. *Aust. J. Zool.*, 9, 1961, pp. 24-37, ill.

SIMPLIFIED METHOD OF STRONTIUM ANALYSIS IN HUMAN BONE. By P. M. Horsford and P. L. T. Ilbery. *Aust. J. Sci.*, 23, 1961, pp. 208-300.

## INSTITUTE OF CHILD HEALTH

Extensive research into a wide range of child health problems was carried out during the year at the Institute of Child Health, Sydney. In addition, the staff co-operated in both undergraduate and post-graduate training at the University of Sydney, in which the Director of the Institute is the Professor of Child Health.

The former Director of the Institute, Professor Lorimer Dods, resigned in June, 1960, and has been given the title of Emeritus Professor by the Senate of the University of Sydney.

Dr. Thomas Stapleton, Assistant Director of the Paediatric Unit, St. Mary's Hospital Medical School, London, England, assumed the office of Director in July, 1960.

## RESEARCH

During the year existing projects were continued and either concluded or extended and one new project was undertaken.

**Rheumatic Fever:** Oral Penicillin prophylaxis continues to be given to every child admitted to the unit with a diagnosis of rheumatic fever or chorea. Since 1952, 170 children have been included in this group, but thirteen of these have been lost from the study for various reasons including two deaths. These children attend a special clinic at intervals of three or four months and their progress is assessed and documented. The social worker visits the home of every new patient and maintains contact with all the families concerned. Some of the older patients have left school, but continue to attend. In addition a larger "control" group of rheumatic children is being studied. These patients are treated by various physicians, but attend the Institute for examination at regular intervals.

The histories, progress and results of cardiac examination of 387 patients who were treated for rheumatic fever or chorea before 1950 are being analysed. As few of these children received chemoprophylaxis this analysis will elucidate details of the natural history of rheumatic fever and chorea occurring initially in childhood.

**Prematurity:** A study to determine the prognosis of premature babies with birth weights of 3 lb. or less has been completed. One hundred children were examined and their parents interviewed. Each child was given a complete medical examination, including audiograms and visual test. An intelligence test was performed by the psychologist and an attempt was also made to assist the effect of emotional and other factors contributing to the child's mental development. Nearly all children were seen by the dentist and, when indicated, further examination was made by the ear, nose and throat and/or eye specialist. In addition to the premature children themselves, a number of non-premature siblings, who acted as family controls, had intelligence tests performed. The living twins of all premature children were similarly tested.

The results of this study are now being assembled and analysed with a view to publication in the near future.

**Hypothyroidism:** The pilot survey of cretinism carried out in 1958-59 has been widened to include a prospective study of antithyroid antibodies in the serum of affected children and their mothers. It is planned to study the mental and physical progress of a group of hypothyroid children over a long period of time, in order to evaluate current methods of treatment.

**Endemic Goitre:** Investigations into the epidemiological aspects of thyroid enlargement which is apparently caused by a food goitrogen has continued. This work is done in association with the Department of Public Health, Tasmania, and the Department of Biochemistry, University of Melbourne. During the current year a short visit was made to the north-west part of Tasmania to investigate a sudden epidemic of thyroid enlargement in children in this area. The specific inquiry is unfinished.

A field trial has been commenced in Southern Tasmania in which a sample of the children who have regularly shown an enlargement of the thyroid each spring, are receiving either tablets of thyroxine or reconstituted dried milk. This trial is expected to be finished in December, 1961. Samples of milk from selected areas were collected under direction and forwarded to Professor Trikojus, University of Melbourne, for analysis.

**Scurvy:** The investigation which commenced in September, 1959, into the sociological background of infants admitted to Royal Alexandra Hospital for Children suffering from infantile scurvy has continued. Up to the present, 40 such infants have been investigated—20 males and 20 females.

The following interesting facts have emerged. The ages of the infants range from six months to eighteen months with the highest incidence at eleven months. Only four were first born. The mothers of these have attended a Baby Health Centre fairly regularly, but the remainder have attended only occasionally or not at all after their first child.

The majority of these infants have not been taking any form of Vitamin C, the reason for this being that when they failed to tolerate orange juice, they were not given an alternative. Mothers stated that they did not know the reason for giving an infant orange juice, i.e. that it represented Vitamin C and prevented scurvy. Most of the mothers have regular contact with relatives.

Contrary to what might be expected only eight of the families were European migrants with a limited knowledge of English.

Analysis of the occupational class of the fathers shows an even number of skilled and unskilled workers, with a few white collar workers. Two-thirds of the families could be said to be living in sub-standard homes.

**Accidents in Childhood:** Observations on the efficacy of a group discussion method in reducing accidents was concluded.

**Parent Education:** An investigation is being made as to why some parents are willing to attend discussions on child-rearing and others are not. The survey is designed as a contribution to the lessening of the gap between the scientific knowledge of child care and parental practices.

**Leucine Sensitive Hypoglycaemia:** The first patient in Australia with this newly discovered form of mental deficiency was recognized and many observations were made on the child and the family. This form of mental deficiency may respond to appropriate dietary and drug treatment.

**Cardiac Surgery:** Studies have continued relating to the effects of cardio-pulmonary by-pass using the Ebsray Heart-Lung Machine at the Royal Alexandra Hospital for Children. Further modifications and refinements have been added to the Heart-Lung Machine. This equipment has been ordered by the Heart Unit at Royal Prince Alfred Hospital and Royal North Shore Hospital, by the Department of Surgery in the University of Sydney for regional perfusion work connected with malignant disease and by the National Heart Foundation for the supply of a similar machine to the Heart Unit in Perth. A considerable amount of electronic equipment has been developed and constructed and is now in routine clinical use. This includes a six channel electronic recorder, a portable E.C.G. monitor and a pacemaker for the treatment of heart block.

**Portal Hypertension:** A survey of cases of portal hypertension forms the subject of a paper presented at the Australian College of Surgeons' meeting this year.

**Malignant Disease:** A survey of malignant disease that has been continued over the past few years has been compiled into a report. A register of malignant disease is being maintained.

**Urinary Tract Infections:** The long-term follow up of children with chronic urinary tract infections continued. New patients with acute and chronic urinary infections were added to the series.

The value of various diagnostic aids, particularly cystography, was studied in the elucidation of anatomical abnormalities of the urinary tract, congenital and acquired.

The benefits of prolonged chemotherapy in the treatment of some cases of chronic pyelonephritis were shown, confirming earlier impressions in the study.

## TEACHING

Modifications have been made in the teaching programme for undergraduate medical students. The time of instruction in medical paediatrics has been extended from five to ten weeks. The number of introductory lectures dissociated from the clinical clerking has been reduced from forty to twelve. During the period of paediatric clerking, a modified tutorial system has been introduced for some of the students in addition to the regular instruction. With the co-operation of the College of General Practitioners, general practitioners hold weekly discussions with small groups. Weekly continuation lecture-demonstrations are now given throughout the student's final year.

A weekly post-graduate round has been held at the Royal Alexandra Hospital for Children. Members of the Institute, in co-operation with the Post-graduate Committee in Medicine of the University of Sydney, have conducted a week-end course in paediatrics and taken part in the annual revision course for general practitioners.

Visiting lecturers to the Institute Staff have included Professors Douglas Hubble (Birmingham), Niilo Hallman (Helsinki), C. C. de Silva (Ceylon), and Wilfred Gaisford (Manchester) and Drs. Charlotte Anderson (Melbourne), John Lorber (Sheffield), Balogopal Raju (Madras) and Michael Spencer (N.S.W.).

Dr. Lek Bunnag of Thailand attended a special course on child development arranged for her at the Institute under the Colombo Plan.

## PUBLICATIONS

THE ROYAL ALEXANDRA HOSPITAL FOR CHILDREN HEART-LUNG MACHINE. D. H. Cohen, V. Hercus, V. R. Ebsray (1960), *Med. J. Aust.*, Vol. II., p. 734.

MASSIVE CHEMOTHERAPY IN MALIGNANT DISEASE IN CHILDHOOD. D. H. Cohen (1960), *Med. J. Aust.*, Vol. II, p. 807.

THE EPIDEMIOLOGY AND PREVENTION OF ACUTE ACCIDENTAL POISONING IN CHILDHOOD. F. W. Clements (1960), *Med. J. Aust.*, Vol. II, pp. 172-175.

HEALTH SIGNIFICANCE OF ENDEMIC GOITRE AND RELATED CONDITIONS. Endemic Goitre, Geneva, W.H.O. F. W. Clements (1960), Monograph Series No. 44, pp. 235-260.

THE VITAMIN D INTAKE OF AUSTRALIAN INFANTS AND THE INCIDENCE OF IDIOPATHIC HYPERCALCAEMIA AND NUTRITIONAL RICKETS. F. W. Clements, W. B. MacDonald, H. E. Williams (1961), *Med. J. Aust.*, Vol. I, pp. 236-238.

NUTRITION IN MATERNAL AND INFANT FEEDING. F. W. Clements (1961) Federation Proceedings, Vol. 20, No. 1, Supp. 7, Part 3, p. 165.

CHILDREN AND THE HOSPITAL. T. Stapleton (1961), *The Australian Nurses' Journal*, Vol. 59, No. 5, pp. 119-122.

A MINIATURE PACE-MAKER FOR DIRECT STIMULATION OF THE MYOCARDIUM. D. H. Cohen, E. Hulme (1961), *Med. J. Aust.*, Vol I, p. 624.

AN INVESTIGATION OF MALIGNANT DISEASE IN CHILDHOOD. D. H. Cohen, C. W. G. Lee (1961), N.S.W. State Cancer Council, Publication No. 5.

THE EVALUATION OF ACCIDENTS TO CHILDREN. J. S. Cullen (1961), *Amer. J. of Public Health*, July, 1961.

## QUARANTINE

### ANIMAL QUARANTINE AND VETERINARY HYGIENE

#### LEGISLATION

During the year the Quarantine (Animals) legislation was amended by Proclamation 68A and Statutory Rules 1960 No. 85 and 1961 No. 23.

Proclamation 68A permitted the importation by air of cooked meats and cooked edible parts of animals contained in hermetically sealed cans or tins provided such importations are accompanied by the Certifications as required when such products are consigned by sea vessel.

The Statutory Rule 1960 No. 85 strengthened Regulation 80 by providing that the Chief Quarantine Officer (Animals) must be satisfied that imported wool does not require further treatment; it also amended Regulation 82 by deleting the requirement for a certificate referring to Vesicular Exanthema of Swine with casings imported from the United States of America; and widened the provisions of Regulation 96A by requiring that all mammalian animals and birds must be examined by a veterinary Quarantine officer prior to export. Statutory Rule 1961 No. 23 repealed and replaced Regulation 95A and enabled the transport of Australian meat to be made between Australian ports on vessels carrying meat of overseas origin provided the controls required in this amendment are effected.

#### ADMINISTRATIVE CONTROLS

Besides these legislation amendments, action was taken administratively to strengthen the defence against the virus diseases Rift Valley Fever and African Horse Sickness.

In the case of African Horse Sickness arrangements were made for horses, intended for importation into Australia from the United Kingdom, not to be consigned via the Suez route as an additional precaution against introduction of this insect borne disease which has spread rapidly throughout the Middle East.

In conjunction with the General Quarantine Division precautions have been taken against the introduction of Rift Valley Fever with persons from South Africa where the disease seriously affects cattle, sheep and to a milder degree, man.

#### IMPORTATIONS SUBJECT TO QUARANTINE

**Domesticated Animals:** Importations during the year comprised—

From—	Horses.	Dogs and Cats.
Great Britain..	76	371
New Zealand..	520	167
Total	596	538

**Laboratory Animals:** Institutions recognized for scientific purposes in Australia imported 626 small laboratory animals under quarantine permits during the year.

In addition the Commonwealth Serum Laboratories continued the importation of monkeys from Asia for use in the preparation of Salk Poliomyelitis vaccine a total of 8,683 arriving by aircraft. On arrival these aircraft were carefully disinfected, and then thoroughly cleaned and disinfected; all litter and waste was incinerated, as in past years.

**Zoological and Other Animals:** A total of 287 animals were allowed to enter Australia for permanent quarantine in registered zoological gardens and circuses. Consignments of queen bees and appreciable numbers of aquarium fish were also imported.

**Goods:** A wide variety of goods subject to quarantine control was imported including hides, skins, wool, sausage casings and foodstuffs of animal origin.

Besides consignments of foodstuffs which were imported under the usual provisions of quarantine legislation and given clearance when these requirements were met, there has also been small sample lines of canned meat and milk products which have been admitted under conditions of strict quarantine control for examination and analysis by manufacturers wishing to market similar Australian-made products. These sample lines were incinerated after examination in this way.

**Biological Products:** The continued implementation of Item 28A of the Third Schedule to the Customs (Prohibited Imports) Regulations gave more effective quarantine control of imported therapeutic substances, such as sera, glandular extracts and vaccines derived from animals. In this field a close liaison was maintained with associated sections of the Department, and especially with the Pharmaceutical Section and the National Biological Standards Laboratory and all applications for permission to import were carefully considered to ensure that there would be no risk of introducing diseases of animals including exotic virus diseases. Where there was a significant quarantine risk the importation was prohibited under the provisions of quarantine Proclamation 6G under which the permission of the Director of Quarantine is required before importation may be made of vaccines, cultures, viruses, disease germs or substances likely to contain disease germs or viruses.

## EXPORTS SUBJECT TO QUARANTINE

The principal animal exports were—

Horses	..	..	..	..	..	1,052
Cattle	..	..	..	..	..	10,660
Buffaloes	..	..	..	..	..	85
Camels	..	..	..	..	..	13
Sheep	..	..	..	..	..	150,221
Goats	..	..	..	..	..	2,322
Pigs	..	..	..	..	..	284
Dogs and Cats	..	..	..	..	..	843
Poultry	..	..	..	..	..	633,648
Miscellaneous (including live fish and birds)	..				..	31,872

Most of the cattle which was exported went to Hong Kong and the Philippines for slaughter but there were also exports for dairy and breeding purposes.

The export of sheep to Malaya for slaughter from Western Australia continued and accounted for most of the sheep exports.

All exports were accompanied by health certificates issued by officers of the Animal Quarantine Service together with appropriate certificates of testing for disease.

## ANIMAL QUARANTINE STATIONS

At all State capital city ports, animal quarantine stations have functioned for detention of imported animals and cattle undergoing quarantine prior to export to Great Britain.

## MISCELLANEOUS QUARANTINE MATTERS

Despite publicity and salutary action taken, numerous small items of animal quarantine risk continue to arrive with incoming passengers and migrants and through parcels post.

These include such risk items as small portions of meat and meat products, eggs, home-made cheese, and straw packing. Many of these are carried by persons destined for country areas or addressed to persons in such areas and there is a very real risk of meat scraps or other like materials being fed to animals and thus involve a risk of introducing diseases of animals. It is highly probable that the outbreak of Swine Fever in New South Wales entered Australia by this means.

Liaison has been maintained with both the Department of Customs and Excise and the Department of Immigration to ensure that pamphlets issued by each for persons coming to Australia are clear on the need to keep these out of Australia to avoid introducing serious live-stock diseases which are present overseas but which are not present in Australia.

Similar information has been supplied to the various foreign language newspapers published in Australia with a view to obtaining better co-operation and lessen the illicit introduction of such items.

These risk items whenever intercepted by Customs Searchers are passed over to Quarantine Officers for incineration.

Customs Officers also co-operated in the control of pet animals on overseas ships of which 949 carried pets all of which were the subject of Shipmasters Bonds. These Bonds are for the safekeeping of the animals on board whilst at Australian ports and animals are checked at all ports of call, not only for disease, but also to ensure that they have not been landed.

## CONFERENCES

During the year under review the Director of Veterinary Hygiene represented this Department at meetings of the Standing Committee on Agriculture held in July, 1960, November, 1960, and February, 1961, and the Assistant Director of Veterinary Hygiene attended the meeting of this Committee held in June, 1961.

In October, 1960, a Conference of Chief Quarantine Officers (Animals) was attended by officers from all States and the Northern Territory and a wide range of animal quarantine topics was covered.

## COMMITTEES CONVENED FOR SPECIFIC PURPOSES

In October, 1960, at the request of the Director-General of Health a Joint Meeting was held of the Veterinary Public Health Committee (under the aegis of the National Health and Medical Research Council) and the Veterinary Consultative Committee (provided for by the Australian Agricultural Council) to consider Equine Infectious Anaemia in Australia, and this Joint Meeting decided, amongst other things, that the veterinary policy within Australia on the control of this disease could now most appropriately be left to each State to determine.

In March, 1961, the Director of Veterinary Hygiene participated in a Special Committee Meeting of Medical and Veterinary personnel convened under the aegis of the National Health and Medical Research Council to consider a proposal by the World Health Organization that an arthropod-borne Virus Regional Reference Laboratory for the Australasian region be established at the Australian National University. Approval was later granted subject to observance of conditions laid down by this Committee.

In May, 1961, at the request of the Chief of the Division of Animal Industry of the New South Wales Department of Agriculture, a Consultative Committee on Swine Fever in New South Wales was convened by the Director of Veterinary Hygiene, and at this meeting delegates from Queensland, Victoria, South Australia, the Commonwealth Department of Health and the C.S.I.R.O. conferred with officers of New South Wales and assisted in the formulation of a policy to limit the spread and then eradicate this recently introduced disease from Australia. This disease was most probably introduced into Australia on this occasion with meat brought in illegally.

In June, 1961, the Director of Veterinary Hygiene attended a meeting of the Veterinary Public Health Committee which discussed the medical and veterinary implications of bovine mastitis antibiotic residues in milk, *Salmonellae* in bone and meat meal and fertilizers, oestrogens in meat and dairy products, the survival of *Brucella* organisms in cheese, and melioidosis in Queensland.

As chairman of the Cattle Tick Control Commission, the Director of Veterinary Hygiene conducted meetings held in November, 1960, and January, 1961.

### OVERSEAS VISIT

In May, 1961, the Director of Veterinary Hygiene attended the Sessions of L'Office Internationale des Epizooties in Paris and presented the Australian point of view on many of the more serious diseases of animals to this international gathering.

While overseas the Director of Veterinary Hygiene proceeded to London and conferred with officers at the United Kingdom Ministry of Agriculture, Fisheries and Food, the Veterinary Research Laboratories at Weybridge and the Foot and Mouth Disease Research Station at Pirbright.

### HUMAN QUARANTINE

The Quarantine Service authorized under the *Quarantine Act 1908-1950* was maintained during the year ended 30th June, 1961.

There were no amendments in this period to the Quarantine Act or to the Quarantine Regulations (General).

Four Proclamations were issued during the year as under:—

Proclamation 50G—Appointing a Mooring Ground for Darwin.

Proclamation 51G—Appointing a Quarantine Line for Darwin.

Proclamation 52G—Revoking Proclamation 30G.

Proclamation 53G—Declaring that Yellow Fever may be brought or carried from or through certain places in South Africa, and that Cholera may be brought or carried from or through India and Pakistan.

## Rehabilitation of the major Quarantine Stations (General) continued.

No case of Quarantinable disease was encountered. A suspected case of smallpox on the M.V. *Silverfell* (England-Australia via Suez) was notified but on examination in Adelaide, the case was diagnosed as chicken-pox.

Two persons arrived at Darwin during the period from Yellow Fever areas without evidence of adequate vaccination against the disease and were each quarantined for six days.

The first case concerned a family of two adults and four children, arriving Darwin ex Ghana on 23rd February, 1961. The youngest child, a four months old baby, had not been vaccinated against Yellow Fever. The mother and baby were quarantined until the six-day incubation period had expired.

The second case arrived Darwin ex Mombasa on 22nd March, 1961. The passenger had been vaccinated against Yellow Fever on 15th March, 1961, and was quarantined till 25th March, 1961, when the vaccination became valid.

TABLE I  
Vessels Boarded and Cleared—1960-61

Port.	Surface.			Air.		
	Vessels.	Crew.	Passengers.	Vessels.	Crew.	Passengers.
Sydney .. ..	671	51,241	32,724	764	8,304	32,861
Newcastle .. ..	136	5,539	42	..	..	..
Port Kembla .. ..	92	3,470	36	..	..	..
Botany Bay .. ..	132	7,120	19	..	..	..
Coffs Harbour .. ..	2	48	3	..	..	..
Eden .. ..	1	61	..	..	..	..
<b>Total (N.S.W.)</b> ..	<b>1,034</b>	<b>67,479</b>	<b>32,824</b>	<b>764</b>	<b>8,304</b>	<b>32,861</b>
Melbourne .. ..	412	28,281	22,057	6	42	138
Geelong .. ..	169	9,873	33	..	..	..
Portland .. ..	4	300	..	..	..	..
East Sale .. ..	..	..	..	7	55	62
<b>Total (Vic.)</b> ..	<b>585</b>	<b>38,454</b>	<b>22,090</b>	<b>13</b>	<b>97</b>	<b>200</b>
Brisbane .. ..	284	18,963	5,643	16	129	632
Bowen .. ..	1	43	..	..	..	..
Cairns .. ..	39	2,269	393	9	51	103
Gladstone .. ..	7	308	..	..	..	..
Mackay .. ..	23	946	..	..	..	..
Townsville .. ..	46	2,254	344	7	51	56
Thursday Island .. ..	21	512	62	..	..	..
Urungan .. ..	3	128	..	..	..	..
Rockhampton .. ..	3	138	..	..	..	..
Bundaberg .. ..	1	15	..	..	..	..
Amberley .. ..	..	..	..	19	123	127
<b>Total (Q'ld.)</b> ..	<b>428</b>	<b>25,576</b>	<b>6,442</b>	<b>51</b>	<b>354</b>	<b>918</b>

TABLE I—*continued*  
Vessels Boarded and Cleared—1960-61—*continued*

Port.	Surface.			Air.		
	Vessels.	Crew.	Passengers.	Vessels.	Crew.	Passengers.
Port Adelaide .. ..	196	10,324	818	..	..	..
Wallaroo .. ..	40	1,513	..	..	..	..
Port Lincoln .. ..	29	1,154	46	..	..	..
Whyalla .. ..	4	169	..	..	..	..
Port Pirie .. ..	22	1,111	183	..	..	..
Port Augusta .. ..	6	244	..	..	..	..
Total (S.A.) .. ..	297	14,515	1,047	..	..	..
Fremantle .. ..	612	65,339	120,244	..	..	..
Kwinana .. ..	215	10,989	..	..	..	..
Albany .. ..	61	3,170	169	..	..	..
Bunbury .. ..	48	2,410	50	..	..	..
Carnarvon .. ..	2	85	..	..	..	..
Derby .. ..	16	1,181	618	..	..	..
Geraldton .. ..	58	2,430	140	..	..	..
Port Hedland .. ..	14	533	..	..	..	..
Wyndham .. ..	5	241	..	..	..	..
Yampi Sound .. ..	5	186	..	..	..	..
Esperance .. ..	8	432	91	..	..	..
Point Samson .. ..	11	707	101	..	..	..
Perth .. ..	..	..	..	263	2,653	8,556
Total (W.A.) .. ..	1,055	87,703	121,413	263	2,653	8,556
Hobart .. ..	25	1,677	28	..	..	..
Bell Bay .. ..	10	511	..	..	..	..
Devonport .. ..	1	18	..	..	..	..
Burnie .. ..	6	150	12	..	..	..
Total (Tas.) .. ..	42	2,356	40	..	..	..
Darwin .. ..	40	1,419	62	1,263	10,699	47,764
Total (All States) .. ..	3,481	237,502	183,918	2,354	22,107	90,299

TABLE II.  
Infectious Diseases on Overseas Vessels arriving in Australia 1st July, 1960, to  
30th June, 1961

Disease.	No. of Cases.					
Chicken-pox .. ..	..	..	..	..	..	.. 70
Infective Hepatitis .. ..	..	..	..	..	..	.. 10
Measles .. ..	..	..	..	..	..	.. 180
Mumps .. ..	..	..	..	..	..	.. 29
Rubella .. ..	..	..	..	..	..	.. 8
Scarlet Fever .. ..	..	..	..	..	..	.. 1
Whooping Cough .. ..	..	..	..	..	..	.. 2

TABLE III

**Inspections and Examinations at Australian Ports Required under the Navigation Act 1st July, 1960 to 30th June, 1961**

Port.	Number of Vessels Inspected.			Number of Seamen Examined.
	Primary Inspections.	Annual Re-inspections.	Special Inspections.	
	1960-61.	1960-61.	1960-61.	
Sydney ..	..	39	3	700
Newcastle ..	1	24	2	282
Melbourne ..	..	30	..	361
Brisbane ..	..	4	..	167
Cairns ..	..	..	..	22
Townsville ..	..	..	..	..
Port Adelaide ..	..	10	..	82
Port Pirie ..	..	..	..	3
Whyalla ..	2	..	..	2
Fremantle ..	..	7	..	319
Hobart ..	..	..	..	6
Launceston ..	..	2	..	6
Devonport ..	..	1	..	..
	3	117	5	1,950

## PLANT QUARANTINE

Vigilance was maintained for unwanted plant diseases and pests at all ports of entry in goods of plant origin.

Timber arriving at Darwin from South-East Asia, particularly Malaya, has been found heavily infested with borers and has necessitated some large scale fumigation with methyl bromide. This process involved importers in expense which they have sought to avoid by importing timber with greater freedom from insect pests.

In co-operation with General and Animal Quarantine some attention has been given to the problem of soil with imported second-hand cars. Soil may carry weed seeds and nematodes as a risk for plant quarantine. Imported second-hand cars are being checked for freedom from soil and if contaminated with soil they are being thoroughly cleansed.

The possibility of changing the treatment required for imported straw packing has been examined in collaboration with animal quarantine. The present requirement of freedom from prohibited cereal seed and treatment with formaldihyde or detention in bond store for 90 days after date of shipment does not eliminate the risk of introducing pests such as Hessian Fly and Stem Borers and diseases such as new strain of rusts and smuts with straw. Appropriate steam heating will meet both animal and plant quarantine requirements and suitable plant for giving this treatment has been installed in England.

## IMPORTATIONS

The importation of broom millet for processing necessitated by the short Australian crop aroused interest particularly from the local growers. The imported commodity was fumigated with Methyl Bromide at 9 lb. per 1,000 cubic feet for 24 hours before shipment and after arrival heat treated at 165° F. for 8 hours to ensure that no insect such as the European Corn Borer could survive nor could any viable seed escape.

There was a further bulk importation of maize grits into Sydney to meet a shortage resulting from a drought in the maize-growing districts of Eastern Australia. The importation was permitted only where storage and processing could be properly policed by quarantine inspectors to ensure no possible escape of diseases, particularly Boil Smut.

Negotiations were opened with New Zealand Government representatives on the possibility of exporting potatoes in quantity from New Zealand, where there was a current surplus, to Australia, where a shortage was anticipated. Initially potatoes for processing into chips were permitted to manufacturers, with facilities approved by plant quarantine, in the metropolitan areas of Sydney and Brisbane.

The U.S.D.A. Quarantine Service provided an assurance that Citrus Canker had been eradicated from the U.S.A. Since it is free of fruit fly there were no quarantine reasons for preventing the importation of citrus fruit from U.S.A. When imports were made the local citrus industry was very concerned but only on the basis of competitive trade.

## POLICY

The policy of limiting nursery stock importations to quantities which can be adequately screened in quarantine has been continued and a figure of 390,288 was reached for the year. It is suggested that this is approaching the base level figure. For comparison the importations for four years during the scaling down operations are given—

1957-58	..	..	..	..	..	..	..	1,039,220
1958-59	..	..	..	..	..	..	..	897,493
1959-60	..	..	..	..	..	..	..	505,160
1960-61	..	..	..	..	..	..	..	390,288

The importation of all plants including bulbs, rose budding eyes, orchids, shrubs and trees is on a strict quota basis. The general principle is to allow each importer sufficient material of a new variety or strain to permit its establishment in Australia within a reasonable time. Commercial fruit varieties and tree species of commerce are established under post entry quarantine at Government institutions where qualified staff are available to check thoroughly these importations whilst in quarantine. Some importations are subject to special testing such as indexing for freedom from virus.

## CONFERENCES

By invitation the Director of Plant Quarantine met the Nursery trade at their annual Australia-wide convention held in Perth where he explained the policy and answered questions.

A Plant Quarantine Conference was held in Adelaide from 17th to 20th October, 1960, when the Chief Quarantine Officer (Plants) from each State Department of Agriculture and the Northern Territory; some of their assistants; representatives from C.S.I.R.O., other Commonwealth Departments and Waite Agricultural Research Institute met with the Director of Plant Quarantine and officers

from this Division. Almost every possible aspect of plant quarantine was discussed, many problems were resolved and action was taken subsequently to implement suggestions made by the conference.

Representatives from the Division attended certain conferences organized by the C.S.I.R.O. Liaison Section which were of particular interest to Plant Quarantine. These included the Second Australian Weeds Conference, Northern Territory Scientific Liaison Conference and Second Seed Certification Conference.

### **PLANT DISEASE CHECK LIST**

Some progress has been made with the compilation of a Plant Disease Check List for Australia. In 1960 Part 1 of Plant Diseases In and Outside Australia, covering vegetable crops, was released for restricted distribution. It is anticipated that this will be the forerunner of at least four parts.

### **RESEARCH**

Efforts to find a seed treatment, applicable on a commercial scale, to free seeds of internally borne diseases, have not yet been successful despite an approach from several angles. Experiments to find a treatment to rid plant roots of nematode cysts without injuring the plant have been conducted without success but more chemicals remain to be tested.

### **PUBLICITY**

The tempo of plant quarantine publicity has been maintained throughout the many diversified channels and mediums which this campaign has opened up. Two films were released. One illustrated the particular problem of the European House Borer having as its objective the idea of recruiting home dwellers for the detection of this elusive but devastating timber pest. The second one depicted many facets of plant quarantine activities. A teacher's Guide Leaflet focussing attention on the Nematode problem has been prepared and released. By constantly keeping the plant quarantine message before the public and by active co-operation with the States in their particular quarantine problems the Plant Quarantine Publicity Campaign has made a notable contribution to the objective of keeping unwanted pests and diseases out.

## TERRITORY HEALTH

### AUSTRALIAN CAPITAL TERRITORY

The administration of health services in Canberra and the Australian Capital Territory is a direct responsibility of the Minister for Health through the Department of Health.

The Department is called upon to perform certain duties which in the States would be carried out by local government instrumentalities.

The functions of the Department include: health inspections, the operation of the Canberra Community Hospital, the Canberra Abattoir, a health laboratory, the District Nursing Service, the School Medical Service, the School Dental Service, veterinary services and an immunization service.

#### **CANBERRA COMMUNITY HOSPITAL**

The Canberra Community Hospital is conducted by a board of eight members, five of whom are elected by the Territory electors, and three of whom are appointed by the Minister for Health.

The Hospital continued to provide for surgical, medical, obstetric, tuberculosis and infectious cases, together with ancillary services. Pre-natal and post-natal clinics were conducted and a dental clinic was available to persons who qualified under a means test.

A statistical summary of the activities of the Canberra Community Hospital for the year ended 30th June, 1961, is set out below:—

Total number of daily occupied beds .. ..	75,346
Daily average number of patients .. ..	206
Total number of births .. ..	1,666
Total number of deaths .. ..	131
Total number of major operations .. ..	1,035
Total number of minor operations .. ..	6,912
<b>Out-patients—</b>	
Total number of out-patients treated .. ..	14,214
Total number of treatments .. ..	18,177
<b>X-ray Department—</b>	
Number of examinations .. ..	8,125
Number of examinations (miniature machine) .. ..	8,698
<b>Ambulance service—</b>	
Number of calls attended .. ..	3,684
Number of miles travelled .. ..	42,755
<b>Dental Clinic—</b>	
Number of patients treated .. ..	1,246
Number of attendances .. ..	4,992
<b>Physiotherapy Department—</b>	
Number of new Out-patients .. ..	1,566
Number of treatments .. ..	14,070
Number of new Ward Patients .. ..	454
Number of treatments .. ..	4,828
<b>Obstetrics Clinic—</b>	
Number of new Out-patients .. ..	327
Number of Attendances .. ..	2,483
Number of In-patients .. ..	1,663
Number of treatments .. ..	3,898

## HEALTH LABORATORY

The Health Laboratory provided full clinical laboratory services to Canberra and adjacent hospitals, and to private medical practitioners in the area, in addition to exercising technical control of the Red Cross Blood Transfusion Service.

The Laboratory also carried out an extensive range of investigations in the public health and medico-legal fields.

The following table compares activities during 1960-61 with those of the previous year:—

				1960-61.	1959-60.
Total examinations performed	..	..	..	149,879	125,632
Total patients attended	..	..	..	45,897	37,553

## TUBERCULOSIS CONTROL

A Chest Clinic which utilizes the hospital x-ray equipment, co-ordinates tuberculosis control activities, and provides separate out-patient facilities, has been set up adjacent to the Canberra Community Hospital.

## DISTRICT NURSING SERVICE

The District Nursing Service, functioning in co-operation with local medical practitioners, was established in 1950. It continued to play an important part in helping to deal with the problems of medical care in Canberra. Home visits have increased from 5,001 in 1951-52 to 12,026 in 1960-61.

## HEALTH INSPECTION

A staff of four inspectors under the Medical Officer of Health was engaged upon public health inspections.

The following licences were issued under the Public Health Ordinance during the year: Prepared meat goods vendors, 147; ice cream vendors, 12; barbers' shops, 44; milk distributors, 50; milk vendors, 101; milk shops, 104; eating houses, 50; meat vendors, 34; and boarding houses, 29.

Samples submitted for analysis were: Water chemical, 413; water bacterial, 481; milk chemical, 245; milk bacterial, 391 and meat chemical, 6.

Quarantine inspection of parcels arriving under bond at the Canberra Post Office was carried out by the inspection staff.

Cases of infectious and notifiable diseases notified were: Acute rheumatism, 1; breast abscess, 1; bacillary dysentery, 10; encephalitis, 2; erythema nodosum, 1; infantile diarrhoea, 36; infective hepatitis, 169; leukaemia, 2; malaria, 2; meningococcal infection, 2; ophthalmia, 12; rubella, 8; salmonella infection, 6; scarlet fever, 5; and tuberculosis, 16.

Legal action was taken in 29 cases for offences against the public health regulations.

## CHILD HEALTH

During the year the work of the School Medical Officer concerned children in the following categories:—

**Infant Welfare:** A staff of seven full-time, triple-certificated sisters of the Canberra Mothercraft Society maintained twelve baby health centres which provided a nursing advisory service, including home visits. During the year 3,183 babies attended the centres and 4,293 home visits were made.

The Canberra Mothercraft Society, subsidized by the Department of Health, administered the infant welfare service in Canberra.

**Pre-School Children:** Pre-school examinations were made only as requested by the teachers-in-charge. The service had to be curtailed because of the heavy demands on the Medical Officer's time. The number of children examined totalled 176. These examinations resulted in eleven defects being notified.

**School Children:** Routine examinations carried out in A.C.T. schools totalled 2,911 and the following defects were notified to parents:—

Vision, 224; hearing, 56; nose and throat, 83.

In addition, there were 103 cases of minor hearing loss and miscellaneous defects.

Personal interviews with 269 parents were arranged.

In June, 1961, the Commonwealth Acoustic Laboratories decided to arrange for monthly visits of one of their officers to supervise cases of hearing loss and particularly to help parents of children wearing hearing aids. It is hoped also to establish a class for educating partially deaf children.

**Immunization:** Immunization sessions were held regularly at Baby Health Centres as in previous years. As no Salk Vaccine was available from February to June, 1961, the number of injections was reduced. Quadruple Vaccine in which Salk is incorporated with Triple Antigen has been available for children in age groups six months to two years. During the period 6,458 doses of Triple Antigen and 257 doses of Quadruple Vaccine were administered.

**School and Pre-School Dental Service:** The number of children examined and treated totalled 8,267. A new clinic was opened at Red Hill Primary School.

**Free Milk:** At 30th June, 1960, some 10,400 children attending 26 schools in the Territory were each receiving one-third of a pint of milk a day. This milk was provided under the *States Grants (Milk for School Children) Act 1950*.

**Ambulance Service:** The Canberra Ambulance Service attended 3,684 calls, of which 731 were accident cases. The Service's vehicles travelled 42,755 miles during the year.

**Recreation:** The National Fitness Advisory Committee allotted the sum of £802 towards the cost of sports equipment, leader training and certain capital expenditure on buildings.

A regular grant of £250 was allocated to the Department of the Interior towards the cost of conducting vacation play centres during January, 1961. A further sum of £750 was shared equally between the Y.W.C.A. and the Y.M.C.A. as a contribution towards the cost of supervisors of physical activities.

## VETERINARY SERVICES

The veterinary services within the Australian Capital Territory include the prevention and control of disease in stock; advice to the district stock-owners with field diagnosis on a herd or flock basis supported by laboratory confirmation; the supervision of the hygiene of dairies and piggeries and the control of the Canberra Abattoir, an establishment at which a full-time meat inspection service of high standard is provided.

**Canberra Abattoir:** The Canberra Abattoir is controlled by this Department and is the responsibility of the Division of Veterinary Hygiene. A veterinary officer is appointed as Superintendent and there is a Commonwealth staff of fourteen including two meat inspectors.

The abattoir is operated on the Solo System and each firm supplies its own labour to handle its live-stock and carcasses. At present there are twelve operators licensed to slaughter at the abattoir, employing a private staff of 21.

During the year, veterinary activities carried out at the abattoir, in addition to the routines of management and the supervision of meat inspection, have included the use of abattoir facilities—

- (1) To aid the Division of Plant Industry, C.S.I.R.O. in an investigation into fat lamb rearing in the Australian Capital Territory.
- (2) To provide specimens for the John Curtin School of Medical Research, the Zoology Department of the Australian National University and the Entomology Branch of the C.S.I.R.O.

The number of sheep and lambs slaughtered in 1960-61 was 72,308 which was an increase of 2 per cent. on the previous year, while the number of pigs slaughtered increased by 19 per cent. to 5,416. There was a fall of 31 per cent. in the number of cattle slaughtered to 5,374.

During the early part of the year new equipment was installed in the By-Products Section. The need for this modern machinery has developed due to the increased slaughtering brought about by the rapid population growth of Canberra. The equipment is designed to receive the inedible offal from the slaughter floor and process it almost automatically to the end products of tallow and meat meal.

**Field and Laboratory Veterinary Service:** Veterinary advice was freely given to stock-owners on disease control and husbandry problems concerning their herds and flocks. Investigations were carried out in the field and some examinations in the veterinary laboratory at the Australian Institute of Anatomy on animals brought in by stock-owners and on specimens collected by veterinary officers in the field.

Diseases and conditions investigated during the year included mortalities and economic loss caused by the following:—

- (a) Diseases declared under the *A.C.T. Stock Diseases Ordinance 1933-1958*.

*Cattle:* Actinomycosis, mastitis, brucellosis, tuberculosis, and eye cancer.

*Sheep:* Contagious footrot, enterotoxaemia, black disease, black-leg, mycotic dermatitis, ovine brucellosis and infestations of lice, ked and suspected psorergates ovis.

*Poultry:* Fowl pox and infectious laryngotracheitis.

- (b) Diseases and conditions not declared under the *A.C.T. Stock Diseases Ordinance 1933-1958*.

*Cattle:* Footrot, bloat, liver fluke infestation, milk fever and infertility.

*Sheep:* Pregnancy toxæmia, hypocalcaemia, photo-sensitisation, internal parasites including haemonchus, trichostrongyles, lung worm and liver fluke, phalaris grass staggers, carbon tetrachloride poisoning, arthritis and mastitis.

*Poultry:* Coccidiosis, leucosis, avian monocytosis, internal parasites, red mites, lice and chronic respiratory disease.

In addition, some routine and experimental surgery was performed for the C.S.I.R.O. farms at Dickson and Ginninderra.

Post-mortems of dogs were performed for the Canberra Police with the diagnosis of strychnine poisoning being confirmed by subsequent tests in the veterinary laboratory.

The movements of stock into and out of the Australian Capital Territory were watched as a safeguard against the spread of disease and the appropriate health certificates were issued for animals moving to other States. Diseases of interest to other States were reported to them as they occurred.

**Routine Veterinary Services:** During the year the dairies and the dairy herds of the Australian Capital Territory were frequently inspected in order to maintain the high standard of hygiene established over preceding years and to assist in any problems encountered by the dairymen. Two new dairies of the "herring-bone" design came into operation and are proving very successful.

No case of tuberculosis was found during the annual test using Commonwealth Serum Laboratories tuberculin intradermally. The test was carried out on 2,406 head of registered dairy cattle.

Commonwealth Serum Laboratories brucella abortus strain 19 vaccine was used to inoculate the dairy replacement stock of 291 calves.

Inspections of registered piggeries in the Australian Capital Territory were made to ensure that they continued to comply with the requirements of the Public Health (Piggeries) Regulations. Two new piggeries were registered and three registrations were not renewed, leaving a total of four registered piggeries in the Australian Capital Territory.

A number of livestock sales was attended at the Hall and Canberra saleyards.

## NORTHERN TERRITORY

The special problem confronting the Northern Territory Medical Service is that a comprehensive health service must be provided for a small population widely spread through a vast area.

In an area of over 500,000 square miles, there are less than 40,000 people, most of whom are dependent on this Service for the medical and dental attention they receive.

The responsibilities of the Department of Health in the Northern Territory are many and varied and include the functions of a State health service, hospital services, pharmaceutical services, dental services, schools and infant health services, and in particular, quarantine services.

A small number of private medical practitioners and private dentists reside and practise in the Territory, but by and large, the population as a whole looks to the Department to maintain health services in the area.

Hospitals are maintained and staffed with Departmental Medical Officers and Nurses. Health Inspectors cover the hygiene and sanitation not only in the towns, but extend their tours into the remote areas, where advice and assistance is afforded to Missions and Welfare Settlements.

A Schools Medical Service based in Darwin, which serves Territory schools and Infant Health Clinics is established in Darwin and Alice Springs.

Survey Sisters working from Darwin and Alice Springs further extend the health services provided, particularly in the sphere of immunization of children, and Infant Welfare.

## AERIAL MEDICAL SERVICE

A radio network connects remote areas with Darwin and Alice Springs where medical advice is freely available and the Aerial Medical Service provides the dual function of evacuating the seriously ill and injured to hospitals and of transporting Medical Officers on regular routine visits to all the major population centres in the Territory.

Dental Officers are also transported by the Aerial Medical Service and an effort is made by air and land transport to bring dental attention as far as possible to the people of remote and isolated areas.

This is a difficult problem, and it is especially so in the field of hygiene, which is beyond the comprehension of the great majority of native people who still live at a most primitive level.

Nevertheless it is encouraging to note that even the most primitive natives accept medical treatment without question and this, undoubtedly, is the heritage of the past efforts of the Medical Service to establish and keep regular contact with them by way of routine visits and surveys.

## QUARANTINE

The major burden of Quarantine in the Northern Territory is at the Darwin Airport where 21 scheduled commercial flights arrive each week southbound through Far Eastern ports.

There has been a sharp increase in the activities of Plant Quarantine during the year, with the fumigation of large quantities of imported timber with methyl bromide.

During the year there was an increase of 160 in the number of aircraft cleared at the airport and a decrease of 14 in the number of ships cleared as will be seen from the following table:—

	Number.		Crew. 1960-61.	Passengers. 1960-61.
	1960-61.	1959-60.		
Aircraft Cleared	..	..	1,263	10,699
Ships Cleared	..	..	50	47,764
			64	62

## FREE MILK FOR SCHOOL CHILDREN

The Free Milk Scheme is now in operation in all schools and pre-schools in the Territory and is working smoothly.

The Scheme has been extended to Batchelor, Adelaide River and Katherine from the Darwin supply. The Katherine supply has not been entirely satisfactory due to handling difficulties but it is still superior to the old method of mixing powdered milk by hand at the schools.

## HEALTH INSPECTIONS

The advent of the new Public Health Ordinance and Regulations in December, 1960, has given more scope to health inspection and has created additional work in the control, registration and licensing of barber shops, eating houses, boarding houses and noxious trades, as well as widening the field of public health supervision.

## MILK SUPPLIES

There has been an increase in the number of local dairies in the Darwin area and a general increase in the milking herds. All this milk production is handled by the original milk factory established in the Knuckeys Lagoon area. The bulk of the fresh milk is used for the school free milk scheme, the surplus being sold to the general public. This surplus is supplemented by reconstituted milk as demand requires.

The new, highly modern reconstituted milk and ice-cream factory recently opened in Darwin to date is operating satisfactorily and bacteriological results of samples have shown that they are well within the standards required by the Dairies Supervision Ordinance.

The Goat Dairy is still operating in the Katherine area, but on a very small scale. All tests to date of the milk have been quite satisfactory.

A frozen fresh milk supply has been established in Alice Springs from a large factory in South Australia. The fresh milk is pasteurized and filled into pint tetra pak cartons at a factory in Clare and transported to Alice Springs by train in ice filled containers. It is distributed in Alice Springs from a refrigerated cold room by vendors.

## HOSPITALS

**Darwin:** The work of the hospital in the year under review has continued to increase without any increase in nursing staff and there were no major structural improvements.

The number of beds available in the hospital is 298 of which 215 were occupied at 30th June, 1961.

A diesel-powered emergency lighting unit was installed. This unit is designed to provide power for the operating theatres and boiler house with limited lighting for the wards, out-patients department and other essential sections of the Hospital. A battery-operated emergency lighting system will still be maintained in the theatres to cover the lag between main power failure and the starting of the diesel generator. A new Calor ironing machine and Calor washing machine were installed in the laundry. In the boiler house installation of three new boilers has now been completed in readiness for final modification as fully automatic boilers to provide steam for 24 hours every day.

A scheme to train native females as nursing assistants for work in hospitals on missions and government settlements was started in June, 1961. The first batch of five trainees are now working in the native wards at the Hospital.

**Alice Springs:** Efforts to reduce the average length of stay of in-patients were successful, resulting in a reduction from 14 days to 9.8 days. The average number of beds occupied per day fell from 91 to 77.8.

The number of in-patients treated during the year increased by 319 compared with the previous year.

There were 244 births during the year, compared with 183 the previous year. This gives a birth rate of 60 per 1,000 of population.

Noticeable increases in cases of infective hepatitis and infantile diarrhoea were apparent this year. In part, this is explained by the reporting of cases from Missions and Settlements by Nursing staff, who are becoming increasingly public health minded.

**Katherine:** Many improvements have been made and it is hoped that more accommodation for patients will be provided to cope with the increasing number of patients, particularly adult European males. Periodically, even the native ward has been found wanting in providing sufficient bed space.

**Tennant Creek:** The Medical Officer-in-charge paid regular visits every six to eight weeks to Banka-Banka, Renner Springs, Helen Springs, Elliott and Newcastle Waters.

There were 51 births in the Hospital during the year. A weekly ante-natal clinic was held and visits totalled 421.

Five hundred and sixty-eight children attended the immunization clinics which were held at the Hospital on Thursday afternoons.

Out-patient attendances totalled 5,714. This figure does not include routine visits for treatment and minor dressings. 1,946 prescriptions were issued.

**Batchelor:** Attendances at the Hospital were 750 during the year. Patients attend the Hospital from as far as Adelaide River and Mt. Bundy Station.

There were no major epidemics during the year. There was an outbreak of streptococcal tonsilitis, involving about 30 people in June this year, which subsided without complications.

The health of the community in general is very good. The response to the influenza vaccination campaign was excellent.

### NATIVE HEALTH

During the year, routine medical visits were carried out on the regular five-weekly calls to missions, settlements and cattle stations and special surveys were carried out at Port Keats, Umbakumba and Daly River Missions.

Leprosy surveys were also carried out to follow-up contacts and suspects as well as to survey the population generally, in order to detect any new cases.

### NATIVE WELFARE

The hygiene and sanitation of native settlements and missions through the Territory have received increased attention over the year.

Efforts were made to visit each mission or settlement at least once throughout the year.

Primarily the accent has been on the improvement of sanitation and the use of some form of septic system has been encouraged in lieu of deep pits or incinerator latrines. Standard plans have been made available for aqua closets, some of which have been built on a few missions with reported outstanding success.

Generally, the hygiene on settlements and missions has improved over the year, but more concentrated supervision is necessary to accelerate the progress.

### INFANT HEALTH CLINICS

The total number of babies enrolled at the Darwin Centre and sub-centres increased during the year with the proportionate increase in the number of births at the Darwin Hospital.

The number of home visits almost doubled this year. This is an important part of the Infant Health Service in Darwin, many mothers with small children experiencing difficulty in attending a centre regularly, because of the lack of transport facilities.

The total attendances have increased by 2,000 with the opening of the Parap Sub-centre weekly and the marked increase in the attendances at the Nightcliff Sub-centre.

	Darwin.		Alice Springs.	
	1960-61.	1959-60.	1960-61.	1959-60.
Total number of babies enrolled ..	533	451	187	176
Number of minor medical treatments ..	1	39	100	190
Number of test feeds .. ..	75	97	51	30
Number of infants referred to Doctor ..	102	147	87	67
Home visits .. .. ..	2,472	1,280	820	719
Hospital (Maternity Ward) visits ..	568	442	176	62

### DENTAL SERVICE

During the year the Darwin School Dental Clinic operated continuously for twelve weeks and the Overland Mobile Dental Unit operated on four occasions for a total period of seventeen weeks. One visit was made to the Cocos (Keeling) Island Group.

The total number of examinations carried out by the staff of the Darwin Dental Clinic, the Aerial and Overland Mobile Units and the School Clinics for the years 1959-60 and 1960-61 is shown below.

	Darwin Clinic.		Overland Mobile.		Aerial Mobile.		Alice Springs.	
	1960-61.	1959-60.	1960-61.	1959-60.	1960-61.	1959-60.	1960-61.	1959-60.
Examinations ..	4,288	4,384	1,615	1,573	3,649	3,304	1,467	2,855

### SCHOOL MEDICAL SERVICE

During the year a total of 3,454 children attending schools and pre-schools was examined by the Schools Medical Officers.

### HEALTH LABORATORY

While the majority of the work of the Laboratory continued to be the routine examination of specimens from patients in the Darwin area, other aspects of the work continued to grow.

Ninety autopsies were performed during the year. Thirty-nine of these were ordered by the Coroner.

Public health work is increasing, especially examination of milk. This work has developed over the last year and a half with the marketing of large amounts of liquid milk in Darwin.

Considerable interest has been aroused by a small outbreak of *Mycobacteria ulcerans* infection on Croker Island. Two acid fast bacilli have been cultured from these cases. One is considered to be *M. ulcerans* and the other is as yet unidentified. Work on this is proceeding—again with the co-operation of the "School of Public Health and Tropical Medicine".

## NOTIFIABLE DISEASES

The following table shows the diseases notified in the financial year 1960-61 as compared with 1959-60:—

### Centre of Notification

—		Darwin.	Alice Springs.	Katherine.	Tennant Creek.	1960-61.	1959-60.
Acute Rheumatism	..	4	1	1	1	7	..
Ankylostomiasis	..	245	..	7	..	252	348
Amoebiasis	..	1	..	..	..	1	2
Chorea (St. Vitus' Dance)	..	..	3	..	..	3	..
Dengue	..	2	..	..	..	2	..
Diarrhoea, Infantile	..	57	322	12	1	392	101
Dysentery, Bacillary	..	46	5	..	1	52	72
Encephalitis	..	..	1	..	..	1	1
Infective Hepatitis	..	10	31	1	1	43	25
Leprosy	..	35	1	..	..	36	33
Malaria	..	12	2	..	..	14	13
Meningococcal Infections	..	..	1	..	1	2	6
Ophthalmia	..	..	10	..	..	10	..
Pleural Effusion	..	1	..	..	..	1	..
Poliomyelitis	..	1	..	..	3	4	14
Puerperal Fever	..	..	1	..	1	2	1
Rubella	..	..	..	1	..	1	20
Salmonella Infection, i.e., other than Typhoid Fever	..	4	1	..	..	5	3
Scarlet Fever	..	..	1	..	..	1	..
Trachoma	..	8	46	1	2	57	644
Tuberculosis, Pulmonary	..	36	8	1	..	45	41
Tuberculosis, Non-pulmonary	..	6	7	..	..	13	6
Typhoid Fever	..	5	..	..	..	5	1
Venereal Diseases—							
Syphilis	..	2	1	..	..	3	4
Gonococcal Infection	..	6	6	10	3	25	27
Urethritis Non-specific	..	14	..	..	..	14	5
Yaws	..	..	..	..	1	1	3
Total Number of Diseases Notified	..	..	..	..	..	992	1,370

## TROPICAL DISEASES NOTIFIED

**Ankylostomiasis:** A continued campaign against this disease was carried out throughout the year. The introduction of "Alcopar" (Bephenium Hydroxynaphthoate) with the advantage of lessened toxicity has made it possible to extend treatment to individuals who would not have been treated with tetrachlorethylene. The progress in native hygiene is also helping to bring about a decrease in the incidence and severity of this disease.

**Leprosy:** A further 36 cases were notified during the year. Co-operation of the native population in accepting treatment continued to increase and it is likely that increasing efforts on the part of Medical Officers to contact natives in hitherto inaccessible areas will result in the discovery of further new cases in the coming year. Special Leprosy surveys are continually being carried out in this part of the campaign against this disease. There were 180 patients in the East Arm Leprosarium at 30th June, 1961.

**Malaria:** No case of Malaria was notified as occurring in an aboriginal native during the year. The pattern this year shows a reversal of incidence, nearly all cases being imported.

**Trachoma:** Medical Officers, experienced in this disease, are continuing to carry out surveys and treatment throughout the Territory. With the continued absence of an Ophthalmic Surgeon no further progress has been made in attempts to isolate the virus from Northern Territory material. Campaigns conducted during the past years have resulted in an apparent decrease in the incidence of this disease and a general improvement in the state of health of the eyes of the persons living in remote areas.

### ANTI-POLIOMYELITIS IMMUNIZATIONS

The following table sets out the number of injections given to residents of the Northern Territory in 1960-61:—

—	1st Injection.	2nd Injection.	3rd Injection.	4th Injection (Contacts of Suspected Cases).	Total.
Darwin .. ..	1,019	940	3,187	14	5,160
Alice Springs .. ..	833	699	1,278	..	2,810
Tennant Creek .. ..	292	127	61	..	480
Katherine .. ..	375	391	77	..	843
Total .. ..	2,519	2,157	4,603	14	9,293

### SMALLPOX VACCINATIONS

During the year 995 vaccinations against Smallpox were carried out at the Darwin Airport. This figure includes staff and officials coming into contact with overseas aircraft, as well as passengers and crew entering Australia.

## Health Services Provided at Main Northern Territory Hospitals

	Darwin.		Alice Springs.		Katherine.		Tenant Creek.		Batchelor.	
	1960-61.	1959-60.	1960-61.	1959-60.	1960-61.	1959-60.	1960-61.	1959-60.	1960-61.	1959-60.
Total number of daily occupied beds ..	..	73,879	68,292	28,621	33,388	8,227	8,131	3,057	3,256	..
Total number of admissions ..	..	4,934	4,412	2,644	2,325	600	725	410	541	..
Average number of daily in-patients ..	..	202	187*	78	91	24	22	8	9	..
Total number of births ..	..	631	525	244	183	62	49	51	38	..
Total number of deaths in hospital ..	..	..	81	98	73	83	24	18	9	..
Total number of post-mortem examinations ..	..	..	..	82	109	22	36	17	12	..
Total number of major operations ..	..	..	400	373	177	168	..	2	2	..
Total number of minor operations ..	..	..	1,863	1,528	403	497	107	122	82	..
Total number of out-patients treated ..	..	48,808*	54,408*	14,148	17,427	4,168	3,947	5,741	6,430	750*
Dispensaries—										782*
Prescriptions dispensed ..	..	19,323	20,824	6,618	8,633	11,921	11,195	1,946	2,926	..
Daily average of prescriptions dispensed per working day ..	..	..	77	86	25	34	38	35	5	..
X-ray Department—										..
Number of examinations ..	..	..	..	8,806	7,830	2,816	2,853	663	469	285
Number of exposures ..	..	..	..	14,376	13,077	4,075	4,900	813	676	432
Ambulance Services—										..
Number of trips ..	..	..	..	1,938	1,661	502	596	151	204	85
Number of patients carried ..	..	..	..	1,785	1,605	419	476	205	313	106
Number of miles travelled ..	..	..	..	20,295	15,805	14,900	15,412	13,666	16,537	10,653
Physiotherapy Departments—										..
Number of patients ..	..	..	..	822	1,337	702	944	..	..	..
Number of treatments ..	..	..	..	3,594	5,565	3,249	4,526	..	..	..

Darwin Hospital.—\* 1960-61—These figures include Bagot Hospital.  
 1960-61—Part-time Physiotherapist (November to January) (May to June).  
 There was no Physiotherapist February, March, April.

Batchelor.—1960-61—\* Out-patients seen at the Doctor's Clinic.

† Out-patients seen at the Daily Clinic.

1959-60—\* Out-patients seen at the Doctor's Clinic.

† Out-patients seen at the Daily Clinic.

## COMMONWEALTH LABORATORIES

### COMMONWEALTH SERUM LABORATORIES

This year has been one of considerable significance for C.S.L.

The major event during the year was the passage through Parliament of legislation to convert C.S.L. from Departmental status to that of a Statutory Commission.

A further important development was C.S.L.'s entry into the export field. To facilitate export development, the Production Manager and Business Manager of C.S.L. visited New Zealand in March and April and later both officers joined the Australian Trade Mission to Asia on the M.V. *Straat Banka*. It was clear from these visits that C.S.L. products are exportable.

Steady progress continued to be made with tasks commenced in recent years. These include the systematic review of production and testing methods to ensure conformity with accepted world standards; the constant search for higher yields from microbiological and biochemical processes; the review of all product literature to give the best possible information to medical and veterinary practitioners; the check of product labels to ensure that the Health, Poisons and Stock Medicines legislation of all States is observed; the costing of all activities to ensure that prices are based on the best possible information; and the replacement of obsolete laboratory equipment, process plant and buildings.

The year under review saw the introduction of Work Study as a service to production at C.S.L. and it is hoped that this can be extended in the future to other Divisions.

#### PRODUCTION DIVISION

**Antibiotic Section:** The quantity of penicillin produced during the year was far below potential output. The rate of production was progressively reduced during the first six months and after December, 1960, no penicillin was produced by the fermentors. All penicillin sold since January, 1961, was drawn from stocks.

During the year the production of formulated penicillin products such as sterile preparations for injection, oral suspension and tablets of the various penicillin salts was continued at sufficient volume to provide for sales of approximately 2,800,000 mega units. Three new products, Pencommas V (for mastitis), Compenase and Aquacaine G Veterinary Suspension were produced while two other products were prepared to improve formulations. These were Penicillin V Oral Suspension (adoption of benzathine salt) and Aquacaine G.

**Bacterial Products Section:** The introduction of a combined antigen containing Polio Vaccine made it necessary to pay particular attention to the manufacture of Triple Antigen and the special triple component for Quadruple Antigen, since these two materials cannot be interchanged once components are pooled.

Portion of a large order for Diphtheria Prophylactic (P.T.A.P.) for Hong Kong was despatched during the year but the balance was cancelled when the Hong Kong Government was able to resume purchase from U.K. The production of Dried B.C.G. Vaccine was doubled when large orders for Singapore and Sarawak were received. The diagnostic agents Blood Grouping Serum, Coomb's Reagent, tuberculins and special media containing antibiotics &c., all showed substantial increases in production.

The media for tuberculosis sensitivity testing were increased in range following recommendations from a meeting of the National Tuberculosis Advisory Council.

The diagnostic agent Brucellin was made available, and a number of special materials was prepared for customer requirement. These included an extract of *B. abortus* organisms, special staphylococcus toxin and a special P.P.D. tuberculin; also, a special Coomb's Reagent is now maintained for testing for brucellosis following the inclusion of this test in the Victorian Health Department's methods of investigating this disease.

**Biochemical Products Section:** During the year the main feature of serum fractionation was the continued large increase in overall activities and the efforts to cope with this in an inadequate plant. The fact that this situation has arisen only about eight years since the inception of this work, is, in itself, an indication of the rapidly growing use of blood fractions in Australia.

More than 22,000 litres of plasma were processed during the year. This represents an increase of approximately 18 per cent. over the previous year and 120 per cent. since 1954-55. Issues of albumin have increased by 170 per cent. since 1954-55.

To meet the increasing demand for albumin, process modifications are proposed which will raise the recovery of albumin by approximately 20 per cent. and in addition, the production of albumin from placentae has been established. These two measures should meet the increasing demand and also allow some accumulation of stocks for emergency use.

The issue of albumin as a 5 per cent. solution has been placed on a routine basis.

Newer fractions and products produced either for use or for clinical assessment include Immune Vaccinal Serum Globulins, Packed Red Cells, Plasmin, Thrombin, Antihaemophilic Globulin, Platelets, and Glycerolized Red Cells.

The production of all serum products, including antivenenes, is in a satisfactory position. Tetanus antitoxin in particular is now being issued at a considerably higher purity than previously. Owing to the build-up of satisfactory stocks of several products, production was suspended temporarily at the end of 1960. The big increase in the plasma levels for tetanus antitoxin resulted in a very rapid build-up of stocks of this product.

Pilot work commenced on the production of a casein hydrolysate for intravenous nutrition and arrangements are being made for the dispensing of imported concentrate as a preliminary to the full production stage.

Following the introduction of the new insulin process in 1959 and the consequent large increase in recovery of the material, considerable stocks of insulin accumulated, with the result that production was temporarily suspended at the end of 1960 and arrangements made to dispose of surplus glands.

The capacity of the plant is now well in excess of Australia's requirements for insulin.

The Insulin Zinc Suspensions were made available during the year but the overall sales of insulin fell appreciably, the only products showing an increase being Isophane Insulin.

Specially purified insulin in the form of both regular and isophane was prepared for patients sensitive to normal insulin.

Successful pilot production of Heparin was accomplished as a preliminary to full scale production.

**Veterinary Products Section:** Activities of this section are carried on at four centres—Parkville, Broadmeadows, Woodend and at the Zoological Gardens, Royal Park.

Production of veterinary vaccines at Parkville continued normally, approximately 17,000,000 doses being prepared during the year. Difficulties were experienced due to increasing sales of *Brucella abortus*, Strain 19 Vaccine (Living), without a corresponding increase in production facilities. A new product was placed on the market—*Leptospira* Vaccine (Bivalent). This was the only vaccine available here which gives the protection against both *L. pomona* and *L. hyos*. There was an overall increase in requirements of the major veterinary products.

The survival rate of the monkeys rose from approximately 35 per cent. twelve months ago, to the present figure of 70 per cent. or better. This is largely due to improved veterinary treatment, diagnostic procedures and strict adherence to hygiene.

**Virus Products Section:** Poliomyelitis Vaccine (Salk). 317,000 doses of this vaccine satisfactorily passed safety and potency tests and were released for issue. This increased the total amount of vaccine made available since the beginning of distribution in 1956 to 17,989,000 doses.

The small amount of vaccine released for issue was due to irregular results obtained from safety tests of vaccine pools. A few safety tests showed the presence of large amounts of virus, while repeated replicate tests showed complete absence of virus. The issue of approximately 1,700,000 doses of vaccine was held up because of these difficulties encountered in safety testing.

A reserve supply of vaccine consisting of 20,000 doses ready for use and 200,000 doses of untested vaccine in bulk was imported from the Connaught Medical Research Laboratories of Toronto. Testing of this vaccine gave rise to further problems and, as a result, its release was temporarily delayed.

A stock of 2,000 litres of virus fluids capable of producing over 3,000,000 doses of vaccine was prepared and is undergoing storage prior to inactivation.

*Quadruple Antigen.* The first pool of this vaccine was prepared in November and 195,000 doses were released for distribution in February.

A second pool containing 200,000 doses was prepared but it was not available for issue because of the testing difficulties associated with poliomyelitis vaccine fraction.

*Tissue Culture Media, Materials and Cell Lines.* The demand for these products steadily increased during the year, showing continued and growing interests in tissue culture techniques throughout Australia.

*Influenza Virus Vaccine.* Production of seven single type components, for incorporation in the polyvalent vaccine, was carried out throughout the year. The level of production was halved in December, 1960, so that production would be in accordance with anticipated sales during 1961 and the consequent reduction in reserve stock. However, the greatly increased demand in the early months of 1961 made it essential to restore production to its normal level in order to meet the demand. Despite this increased production the reserve stocks of most monovalent type vaccines were exhausted.

The increase in demand was no doubt due to publicity given to the epidemics of influenza, caused by types A2 and B, which occurred in the United Kingdom during January-February, 1961. A further factor was the decision of the

Victorian Public Health Commission to recommend the immunization of all children under the age of five years. A special dilute vaccine was requested for use in this campaign, and was made available within two weeks of the request.

The volume of polyvalent vaccine produced amounted to 983 litres, yielding approximately 885,000 doses and the sales were 942,362 doses. The corresponding figures for the dilute strength vaccine for children were—

304 litres (547,000 doses) and the sales 357,858 doses.

*Smallpox Vaccine.* Issues for the year amounted to 193,212 doses which was an increase of almost 10 per cent on the previous year.

*Typhus Vaccine (Epidemic and Murine).* Sales for the year amounted to 3,695 doses and this required testing of stocks only. No actual production was undertaken.

*Rickettsial Diagnostic Agents.* Production of complement fixing antigens for diagnosis of infections due to *C. burnetii* and to the Ornithosis-Lymphogranuloma Venereum group of organisms was undertaken to meet the continuing demand for these agents. As a result of the establishment of high titre seed preparations, maintenance of a consistent quality in production was possible.

*Yellow Fever Vaccine.* Production and testing of a small batch of Yellow Fever Vaccine was undertaken, and this vaccine was comparable with previous production. As this was the first production of this vaccine since 1956, a fresh nucleus of staff trained in the necessary techniques was established.

*Veterinary Virus Vaccines.* Production of living virus preparations for use in the prophylaxis of infectious laryngotracheitis, pigeon pox, fowl pox, canine distemper and contagious postular dermatitis; and for the production of canine distemper antiserum was continued.

**Packaging Section:** During the year a total of 5,982,100 containers was filled and packaged—a 4 per cent. increase over the previous year.

The change over to new packs for single dose containers proceeded steadily and a number of other new packs was introduced. As a result of this and the purchase and installation of new filling machines, staff totals were reduced to 98—a saving of 22 per cent.

**Development Section: Antibiotics.** An extensive programme was commenced in September, 1960, with a view to getting experience with and solving problems likely to be met in manufacturing the new semi-synthetic penicillins, penethicillin and 2 : 6 dimethoxyphenylpenicillin. The following problems were studied:—

- (a) Biosynthesis of the “penicillin” nucleus 6-aminopenicillanic acid (6 APA).
- (b) Concentration, extraction and purification of 6 APA.
- (c) Enzymic conversion of penicillin to 6 APA.
- (d) Synthesis of the new penicillin from 6 APA.
- (e) Biological assay and chemical analysis of 6 APA and the new penicillins.

In collaboration with the School of Dairy Technology, Werribee, Victoria, work in the dye-marking of milk contaminated with penicillin derived from the treatment of mastitis was completed.

**Bacteriology:** A complete investigation of the method of manufacture of Pulpy Kidney Vaccine was commenced in July, 1960. Work on the culture side to date has shown that a toxin content many times greater than the routine

method can be obtained by continuous feeding of carbohydrate and pH adjustment. Processing methods to obtain greatly improved vaccine as a result of the improved toxin production are now being sought. It is felt that these results may lead to similar improvement in the other veterinary clostridial vaccines.

*Biochemistry.* Work continued on investigating the effects of storage of biological products with various preservatives and container closures.

A small quantity of d-Penicillamine was prepared and used clinically with good effect. A larger quantity is now in preparation to meet any further requests. Demand is not likely to be great.

*Blood Products.* Work with the Cohn Fractionator continued throughout the year. Over 200 donations of blood were taken from donors provided by the Red Cross for fractionation and preparation of plasma and cell fractions. In addition the Red Cross provided 40 donations for red cell preservation work. The various techniques with this machine now present little difficulty and can be used as required.

*Animal Blood Products.* Investigation has shown that it is possible to prepare dried concentrated antitoxins and antivenenes which can be readily reconstituted.

A simple agar diffusion technique was developed for identifying snake venoms.

Efforts to prepare a Funnel-Web Spider Antivenene continued, but the toxin component was found to be almost non-antigenic. Chemical aspects of the problem are being investigated in the Research Division.

Work is being carried out on the hyperimmunization of horses for the preparation of antivenenes against Stonefish, Malayan Sea-snakes, Malayan Cobra, Malayan Viper and Brown snakes, and Australian Polyvalent Antivenenes.

*Virology.* The W.H.O. influenza centre at C.S.L. isolated no influenza virus from throat washings received from the Melbourne suburban area. The identification of strains isolated at Fairfield Infectious Diseases Hospital was confirmed at C.S.L. Commonwealth Health Laboratories throughout Australia, alerted for influenza, had no occasion to forward specimens.

The viruses isolated from the Port Keats, N.T., epidemic, and referred to in last year's Report, were confirmed as Type D influenza (Sendai virus).

Tests on 868 serum samples from Victoria and South Australia, received through Red Cross Blood Banks showed no evidence of a rise in influenza antibodies in the community. These results indicated the absence of influenza in Australia during the year.

Serological surveys to determine the efficacy of influenza vaccine were conducted in seven groups, mainly children and babies, receiving vaccine of different strengths. Antibody estimations on these sera are still being done. There are 1,540 sera in the whole series and each is tested against seven virus strains.

During the year C.S.L. accepted a W.H.O. invitation to take part in a collaborative assay of a proposed reference yellow fever antiserum. Nine laboratories in different parts of the world participated. The test done at C.S.L. was the neutralization test in mice.

## CONSULTANT DIVISION

**Medical:** Over the twelve months a study on immunization in infancy was made with a quadruple vaccine containing the whooping cough, diphtheria, tetanus and poliomyelitis components. The result of the investigation showing the serological response to the vaccine has been presented to the National Health

and Medical Research Council, and in conjunction with the Australian Paediatric Association recommendations have been made for the use of the vaccine in children.

A concentrated vaccine was specially prepared containing enteric organisms and the tetanus component, and was used to investigate the response for primary and reinforcing doses when administered by the intradermal route. This trial, which was carried out with the co-operation of the staff at Flinders Naval Depot, is now completed and the results will shortly be available.

In children, the serological response to immunization with Influenza Virus Vaccine has been investigated together with the effect of varying the size of the dose and route of administration. The trials carried out in the adult groups at C.S.L. and the Balcombe Apprentice School will provide the serological effects of reinforcing doses given at yearly intervals, as well as clinical information during epidemics of the disease.

Virus studies have been undertaken in some localized outbreaks of respiratory infection and particular attention has been given to the laboratory investigation of viruses producing disease similar to poliomyelitis.

The various studies on reactions to biological preparations and the durations of Mantoux conversions following B.C.G. vaccinations, the use of purified tetanus toxoid and antihaemophilic factor, and the production of blood grouping sera are continuing and useful information is being obtained.

**Veterinary Section:** The work in this group has been related to the transportation and maintenance of the health of large colonies of monkeys procured for the preparation of poliomyelitis vaccine. Various controlled studies have been made on the types of prophylactic medication which may be employed to prevent disease in these animals during transport and their period of quarantine in Australia. The increased knowledge of their habits and their diseases has been of considerable assistance in reducing mortality.

In addition the veterinary services have been maintained for the live-stock at the Laboratories and the Broadmeadows farm. During the year several epidemics of mycotic or bacterial origin have required both veterinary and bacteriological examination.

**Scientific Section: Blood Group Reference Laboratory.** The blood group diagnostic agents prepared at C.S.L. have been rechecked throughout the year and supplies of anti-Rh sera and other blood testing sera have been maintained.

The Laboratory has continued its work in problems of blood groups and blood transfusions which have been received from laboratories throughout Australia and the Red Cross Blood Transfusion Services. From these problems material suitable for several publications has been obtained.

Throughout the year Mr. R. T. Simmons, a consultant in this Section, received several Australian and International acknowledgements for his outstanding scientific contributions in the field of blood group serology. In 1960 he attended the Eighth International Congress of Haematology and the Eighth International Congress of Blood Transfusion held in Tokyo.

## RESEARCH DIVISION

**Bacteriological Research:** Biological studies on staphylococcal toxin are being made using fractions obtained by curtain electrophoresis from highly potent and pure toxin prepared by cellophane tube culture.

In collaboration with Veterinary Research Section, a large number of strains of *Staphylococci* causing bovine mastitis have been collected and are being culturally and biologically studied. Protection experiments in mice have commenced and all strains have been identified for phage type. An agent in *Staph. albus* (Strain 805) producing "interference" has been analysed and results so far indicate that it is a polysaccharide. Experiments have commenced to determine the relationship of the "interference" effect to the endotoxin-induced transitory non-specific resistance described by other workers.

The interaction of factors in staphylococcal toxins other than lethal factors with ganglioside, and the phospholipase activity of bacterial toxins, is being investigated to ascertain the part played by lipases in the defence mechanism of the host. The effect of inoculum size on the results of testing antibiotic sensitivity of staphylococcal strains has been examined for nearly 80 strains previously reported as "resistant to penicillin G". A slight reduction in the number of organisms inoculated could appreciably alter the result of the test. A study of the toxin elaborated by *Cl. tetani* grown in cellophane tube culture and of methods to assay tetanus antitoxin by haemagglutination, latex-agglutination, bentonite flocculation and toxin-spore agglutination have commenced.

**Veterinary Research:** Investigations of outbreaks of distemper in dogs following vaccination showed that one strain was distemper virus; the other strains have not yet been identified. Serological methods for recognition of distemper virus infection were studied. One important phenomenon was noticed in the egg-adapted vaccine strain from Onderstepoort which may have great practical importance in application to distemper prevention and recognition.

Work continued on a suitable method for production of toxin from tick *Ixodes halocyclus* with attention directed at methods for fractionation and on a number of *Leptospira* of human serotype with a view to their inclusion in Leptospiral vaccines.

**Virus Tissue Culture Research:** Investigations continued to develop methods of tissue culture which may be utilized in the study of virus infections and the role of virus vaccine in the control of these diseases.

The cultivation of strains of measles virus in human kidney permitted work to commence on the adaptation of the virus to check embryo tissue culture. By this means, it may be possible to attenuate the virus rendering it suitable for use as an attenuated virus vaccine.

Attempts have been made to cultivate the causative agent of equine infectious anaemia. Cultivation of horse tissues has been readily achieved but there has been no evidence of successful virus isolations.

Viruses have been cultivated from specimens of cases of respiratory illnesses submitted by Commonwealth Health Laboratories or selected by the C.S.L. medical officers. A number of cases of mild respiratory illness occurring amongst defence personnel near Melbourne in 1960 was due to "Coe" virus infection, recently recognized as one of a number of agents causing pharyngitis and coryza.

Investigation of specimens from cases of poliomyelitis occurring in Australia during the period has demonstrated the increased incidence of poliovirus type III while a number of cases due to type I infection also occurred.

Examination of the antibody response to polio vaccination has continued. The levels of type I and of type II poliovirus antibody, although still high, have shown a declining level four years after vaccination while type III poliovirus antibody has declined to a low level.

Chromosome analysis of tissues culture cells has been extended to a range of suspected genetical abnormalities. Three persons have been found to possess chromosomal features not previously reported. The range of tissues successfully cultured has been extended and now provides a useful bank on which to draw when selecting tissue cultures required for virus investigations. A study of the antibody to tissue culture cells indicates the insensitivity of the test system and the poor antigenic property of the tissue culture cells. Cells have been prepared for chemical analysis undertaken in the Protein Chemistry Research Section.

**Biological Chemistry:** Physical and chemical methods have been developed for the fractionation of foetal calf serum to isolate materials active in tissue culture growth. Such methods include chromatography on columns, preparative electrophoresis, ultra-dialysis, alcohol fractionation etc. Arising from this work a detailed study has been made of the glycoprotein "fetuin" particularly in respect of carbohydrate structure, methods of subfractionation, nature of the carbohydrate-protein linkage, enzymatic degradation, "end group" analysis and immunological properties.

The electron microscope has been used to study the size and shape of macroglobulins and also the mechanism of attachment of antibody molecules to influenza virus. Some preliminary studies have been made of the structure of collagen fibres and the nature of the cell membrane of *Staph. aureus*.

In the lipid field, muscle phosphatides have been shown to be of importance in the transport of electrolytes. Other studies on a related project have demonstrated that the composition of the growth medium affects, both qualitatively and quantitatively, the phosphatide content of the tissue culture cell line "HeLa".

Nucleic acid studies, again with the cell line "HeLa" have shown that isolated "HeLa" nucleic acid has essentially the same base ratios as normal mammalian cells. Further, addition of this nucleic acid to other cell lines has, so far, produced no abnormality in growth.

Analytical ultracentrifugation and a recently developed technique of immuno-electrophoresis have been used to characterize foetal, adult and pathological sera as well as venoms, toxins and a variety of C.S.L. products. Both of these techniques will supplement results obtained with a recently acquired Moving Boundary Electrophoresis Apparatus.

Some preparative work is in progress on the synthesis of the new penicillins from 6-amino penicillanic acid (6 A.P.A.). Parallel with this, methods of extraction of 6 A.P.A. from fermentation liquors are being investigated and a brief study has been made on inhibitors of the enzyme penicillinase.

Extensive investigation of certain bacterial toxins is in progress. Emphasis has been placed on the physical and chemical fractionation of the toxin of *Staph. aureus* and also on no-specific protection against this toxin. Such protection apparently involves enzymes such as phospholipase A and complex materials of the ganglioside type. Several papers on this project have been published during the year.

In order to produce more potent tetanus toxoid and antitoxin and, if possible, to reduce allergic reactions in susceptible recipients, investigational work has commenced on toxin fractionation methods and on enzymic digestion of antitoxin. Similarly, some preliminary collaborative studies on the chemical and immunological nature of canine tick toxin have given a method of isolation for "pure" active material. The fluorescent antibody technique will later be applied in much of this work.

At present, no antiserum to the venom of the Funnel Web spider is available, presumably because of the chemical nature of the venom. Physical, biochemical the amino acid analysis of this material has shown it to be a peptide type compound. This work may later provide a means of counteracting Funnel Web spider bite.

**Biochemical Research:** The investigation of biochemical aspects of non-specific protection against bacterial exotoxins continued.

Using staphylococcal toxin (lethal component for mice) as a pattern, advance has been made in the understanding of some of the factors involved in the *in vitro* inactivation of toxins by ganglioside. However, it is now evident that the interaction involved is not limited to toxins. Proteins other than toxins form firm combinations with ganglioside.

From chemical consideration only, it now appears unlikely that a relationship exists *in vivo* between the protection of experimental animals against bacterial toxins by phospholipase A and the interaction of toxins and ganglioside.

The significance of these actions of phospholipase A and ganglioside, with toxins. *in vivo*, is now being studied.

#### PUBLICATIONS

STUDY IN THE EFFICIENCY OF VACCINATION AGAINST INFLUENZA IN TWO EMPLOYMENT GROUPS IN MELBOURNE IN 1959. A. E. Duxbury, T. E. B. Keen. *Med. J. Aust.*, Vol. 2, pp. 206-208 (Aug. 6, 1960).

THE USE OF A PAPIAN SOLUTION OF APPROXIMATELY pH 3.0 IN RH TESTING AND ATYPICAL ANTIBODY DETECTION. J. A. Albrey, R. T. Simmons. *Med. J. Aust.*, Vol. 2, pp. 210-212 (Aug. 6, 1960).

A BLOOD GROUP GENETICAL STUDY MADE IN A SURVEY OF ILLNESS IN MONOZYGOTIC AND DIZYGOTIC TWINS. R. T. Simmons, J. J. Graydon, R. Jakobowicz, R. K. Doig. *Med. J. Aust.*, Vol. 2, pp. 246-249 (Aug. 13, 1960).

ANTI-M ANTIBODY AS A RARE CASE OF HAEMOLYTIC DISEASE OF THE NEW-BORN. R. T. Simmons, V. I. Krieger, R. Jakobowicz. *Med. J. Aust.*, Vol. 2, pp. 337-338 (Aug. 27, 1960).

A FURTHER EXAMPLE OF ANTI-BY (BATTY) IN THE SERUM OF A WOMAN WHOSE RED CELLS ARE OF THE A<sub>x</sub> (A<sub>0</sub>) SUBGROUP OF GROUP A. R. Jakobowicz, J. A. Albrey, W. J. McColluch, R. T. Simmons. *Med. J. Aust.*, Vol. 2, pp. 294-296 (Aug. 20, 1960).

EPIDEMIC ADENOVIRUS INFECTION IN A VICTORIAN MIGRANT CENTRE PRESENTING AS PHARYNGO-CONJUNCTIVAL FEVER. A. E. Duxbury, R. McCutchan, J. White, L. O'Keefe. *Med. J. Aust.*, Vol. 2, pp. 413-416 (Sept. 10, 1960).

PENICILLIN V BLOOD LEVELS AFTER ORAL ADMINISTRATION OF THE BENZATHINE AND HYDRABAMINE SALTS. T. E. B. Keen, A. G. Mathews. *Med. J. Aust.*, Vol. 2, pp. 575-576 (Oct., 8, 1960).

RH ANTIBODIES OF NATURAL, IDIOPATHIC OR GENETICALLY CONTROLLED OCCURRENCE. R. Jakobowicz, R. T. Simmons. *Med. J. Aust.*, Vol. 2, pp. 534-536 (Oct. 1, 1960).

LONG-TERM STORAGE OF TISSUE CULTURE CELLS. J. Ferguson. *Aust. J. exp. Biol. med. Sci.*, Vol. 38, pp. 389-394 (1960).

VENOM YIELDS AND TOXICITY OF THE VENOMS OF THE MALE AND FEMALE TIGER SNAKES. S. Wiener. *Med. J. Aust.*, Vol. 2, pp. 740-741 (Nov. 5, 1960).

LABORATORY STUDIES ON THE PURIFIED PENICILLINASE OF *BACILLUS SUBTILIS*. A. G. Mathews, N. M. Semple. *Med. J. Aust.*, Vol. 2, pp. 976-978 (Dec. 17, 1960).

PENICILLINASE IN PENICILLIN REACTIONS. J. C. Trinca, T. E. B. Keen. *Med. J. Aust.*, Vol. 2, pp. 973-976 (Dec. 17, 1960).

THE CHROMATOGRAPHIC ISOLATION OF TETANUS TOXIN ON DIETHYLAMINO-ETHYL CELLULOSE COLUMNS. A. G. M. Marr, R. W. Patterson. *Aust. J. Sci.*, Vol. 23, pp. 131-133 (Oct., 1960).

AN IMMUNOLOGICAL STUDY OF LEPTOSPIROSIS POMONA. L. J. Laurie Rhodes. *Aust. Vet. J.*, Vol. 36, pp. 419-426 (Nov., 1960.)

MULTIPLE ANTIBODIES IMITATING THE PRESENCE OF A PANAGGLUTININ IN THE SERUM OF A PATIENT SUFFERING FROM HAEMOLYTIC ANAEMIA. S. Whittingham, R. Jakobowicz, R. T. Simmons. *Med. J. Aust.*, Vol. 1, pp. 205-207 (Feb. 11, 1961).

INACTIVATION OF STAPHYLOCOCCAL, TETANUS, AND DIPHTHERIA TOXINS BY GANGLIOSIDE. E. A. North, H. M. Doery. *Brit. J. exp. Path.*, Vol. 42, pp. 23-29 (Feb., 1961).

HAEMOLYSINS IN VENOMS OF AUSTRALIAN SNAKES. OBSERVATIONS ON THE HAEMOLYSINS OF THE VENOMS OF SOME AUSTRALIAN SNAKES AND THE SEPARATION OF PHOSPHOLIPASE A FROM THE VENOM OF *PSEUDECHIS PORPHYRIACUS*. H. M. Doery, J. E. Pearson. *Biochem. J.*, Vol. 78, pp. 820-827 (Apr., 1961).

THE INTERPRETATION OF ANTIBIOTIC BLOOD LEVEL CURVES. A. G. Mathews. "Quantitative methods in pharmacology", edited by H. de Jonge, pp. 357-367 (1961).

THE SYDNEY FUNNEL-WEB SPIDER (*ATRAX ROBUSTUS*) 3. THE NEUTRALIZATION OF VENOM BY HAEMOLYMPH. S. Wiener. *Med. J. Aust.*, Vol. 1, pp. 449-450 (Mar. 25, 1961).

RELATIONSHIP OF THE SARCOPLASMIC RETICULUM TO SARCOLEMMA IN SHEEP CARDIAC MUSCLE. F. O. Simpson, S. J. Oertelis. *Nature*, Vol. 189, pp. 758-759 (Mar. 4, 1961).

THE STATISTICAL APPROACH TO SAMPLING PROBLEMS. A. G. Mathews. *Aust. J. Pharmacy*, Vol. 42, pp. 578-581 (June, 1961).

STATISTICS IN THE BRITISH PHARMACOPOEIA. N. M. Semple. *Aust. J. Pharmacy*, Vol. 42, pp. 577-578 (June, 1961).

GROUP A BLOOD INCOMPATIBILITY DUE TO THE DEVELOPMENT OF APPARENT ANTI-A<sub>1</sub> ANTIBODIES IN A PATIENT OF SUBGROUP A<sub>2</sub>. R. Jakobowicz, R. T. Simmons, J. P. Carew. *Vox Sanguinis*, Vol. 6, pp. 320-327 (May, 1961).

THE ACTION OF PHOSPHATIDASE A, SODIUM OLEATE AND GANGLIOSIDE ON THE EXOTOXINS OF *CL. WELCHII* AND ON THE NEUROTOXIN OF *SHIGELLA SHIGAE*. E. A. North, G. Pawlyszyn, H. M. Doery. *Aust. J. exp. Biol. med. Sci.*, Vol. 39, pp. 259-266 (June, 1961).

SYMPTOMLESS SALMONELLOSIS AND SHIGELLOSIS IN CHILDREN FROM A RURAL POPULATION IN CEYLON. J. Gulasekharan, T. Velaudapillai, Z. Hyg. *InfektKr.* 147, pp. 347-349 (Apr., 1961).

BRUCELLA ABORTUS (STRAIN "VAN DER SCHAFF") ISOLATED IN CEYLON. J. Gulasekharan, A. Cockburn. *Indian J. med. Res.*, Vol. 49, pp. 3-5 (Jan., 1961).

THREE NEW SALMONELLA TYPES FROM CEYLON. S. KOTEE, S. WELIKADE AND S. LANKA. J. Gulasekharan, T. Velaudapillai, S. Sabanathan. *Indian J. med. Res.*, Vol. 49, pp. 1-2 (Jan., 1961).

## COMMONWEALTH SERUM LABORATORIES

## PROFIT AND LOSS STATEMENT

For the Year Ended 30th June, 1961

<i>Trading Revenue—</i>		£
Sales of products, including reimbursements for issues, by authority, free of charge	.. .. .. .. .. .. .. ..	2,209,652
<i>Trading Expenditure—</i>		£
Manufacturing cost of sales	.. .. .. .. .. .. ..	1,724,465
Administrative and selling expenses	.. .. .. .. .. .. ..	494,823
		<u>2,219,288</u>
		9,636
<i>Operating Loss—</i>		
<i>Less Appropriations—</i>		£
(i) Consultative services	.. .. .. .. .. .. ..	42,275
(ii) Research expenses not recovered	.. .. .. .. .. .. ..	97,199
(iii) Development expenses not recovered	.. .. .. .. .. .. ..	123,448
		<u>262,922</u>
<i>Nett loss</i>	.. .. .. .. .. .. ..	<u>272,558</u>

## BALANCE SHEET

As at 30th June, 1961

<i>Funds employed</i>	.. .. .. .. .. .. .. ..	£
Represented by the following assets:—		
<i>Assets—</i>		
Cash in hand and at bank, stamps	.. .. .. .. .. .. ..	316,486
Sundry debtors, prepayments	.. .. .. .. .. .. ..	352,858
Stocks	.. .. .. .. .. .. ..	1,904,616
Land, buildings, plant ( <i>less</i> provisions for depreciation)	.. .. .. .. .. .. ..	4,198,990
		<u>6,772,950</u>
<i>Less Sundry Creditors, Accruements, Deposits on Contracts, Provision for royalties</i>	.. .. .. .. .. .. ..	202,155
		<u>6,570,795</u>

## COMMONWEALTH X-RAY AND RADIUM LABORATORY

The Commonwealth X-ray and Radium Laboratory has served, since its establishment in 1929, as the national centre for radiological physics.

The functions of the Laboratory fall into three broad categories: Service, Advisory and Investigational.

## RADIUM SERVICES

In 1928, on the recommendation of the Director-General of Health, the Commonwealth Government purchased ten grams of radium for use in Australia in the treatment of cancer. The Laboratory acts as the custodian of this radium and maintains a central reserve of the national radium holding. During the year a total of 2,046 milligrams of the radium were transferred in and out of the reserve.

Some of the radium is mounted in the form of needles, tubes and plates; the remainder is in soluble form for use in the radon services in Australia.

Radium in the form of needles, tubes and plates is made available on loan to approved hospitals, subject to an agreement between the Department and the management of the hospital concerned. Commonwealth radium is on loan to centres as distant as New Guinea and Fiji.

The Laboratory holds a Secondary International Radium Standard (Second Series, No. XII.), issued by the International Radium Standards Commission in 1928. Against this standard the Laboratory has calibrated a number of sets of working sub-standards which are on loan to centres in Australia and New Zealand. These sub-standards are used for the measurements of radium and radon activity. Their use ensures that all such measurements are made in terms of the same ultimate standard.

Radium containers may be damaged in use and are then neither safe nor effective. Containers are inspected for damage as occasion arises and arrangements made for their repair when necessary.

When the radium container is mislaid there is not only the financial loss to be considered, but also the possibility that the radium, whether still in its container or distributed freely, may be in unsuspected contact with humans. Sensitive methods of detection are available and the Laboratory conducts searches for lost radium when the need arises.

To meet the physical requirements of recently-developed radiotherapeutic techniques, consideration is being given to a further conversion of part of the national radium holding to gynaecological tubes of more suitable mounting. Hospitals holding Commonwealth radium on loan have been asked for their requirements and for details of the radium they are willing to return so that the conversion can be planned to meet radiotherapeutic requirements. The analysis of the replies from hospitals is now being undertaken.

Statistical data of the Radium Services of the Laboratory is contained in Table 1 on page 100.

## RADON SERVICES

The radiations effective in radium therapy are the beta and gamma rays emitted by radium B and radium C. Radon, the gaseous decay product of radium, also produces radium B and radium C and can therefore be used in place of radium. This substitution has a number of practical and economic advantages.

A part of the national radium holding is used for the preparation of radon, for use in the treatment of cancer. Centralised radon services using this radium are maintained at the Laboratory, at the Bureau of Physical Services, New South Wales, and the Department of Radiation Physics, University of Queensland. The X-ray and Radium Laboratory issues radon for use in Victoria, Tasmania, South Australia and Western Australia. During the year 39,360 millicuries were issued from the Laboratory for all purposes. Of this total activity, 29,924 millicuries were issued for medical treatment—20,311 at no charge for patients in public wards of hospitals and 9,613 at a nominal charge for patients treated in private practice. The remainder was used for industrial and research purposes. The total issued represented an increase of 19 per cent. compared with the previous twelve months.

Until a few years ago, radon held an important place in industrial radiography by reason of its low monetary value and the small size of the highly active sources which can be prepared. The "peak year" was 1952-1953, during which 88 sources for industrial radiography, containing a total of 28,785 millicuries, were issued. Since that time artificial radio-isotopes such as cobalt-60 have largely replaced radon. In the year 1959-60, no radon was issued by the Laboratory for industrial radiography. However, in the year under review, seventeen

industrial radiography sources with a total radon activity of 8,365 millicuries were issued. These issues were made when technical reasons indicated that radon was to be preferred to the artificial radioactive sources.

Radon has also been issued by the Laboratory to the Postmaster-General's Department for use in tracing leaks in buried telephone cable and to the School of Civil Defence at Macedon, Victoria, for instructional purposes.

During the year, the Laboratory designed and constructed an electronic equipment for the rapid and efficient measurement of the activity of radon. Among other advantages this equipment has permitted the more rapid checking of the radon content of individual radon needles, gynaecological tubes and capillary issued from the Laboratory.

Concurrently with the development of this equipment, new facilities for the safe storage of radon-filled capillary tubing and remote-handling equipment were designed and constructed in the Laboratory to speed up handling procedures and to reduce the radiation exposure of personnel.

An automatic radon purification equipment designed in the Laboratory is nearing completion and will shortly be subjected to performance tests.

**Operations with Precious Metals and Other Construction Work for the Radon Services:** Radon issued in Australia and New Zealand for medical purposes is prepared in capillary tubing of pure gold. Many radon containers consist of gold tubes (of various diameters and lengths) containing this radon-filled capillary. The Laboratory constructs all the gold tubing used in the various radon services in Australia and in the Dominion X-ray and Radium Laboratory, Christchurch, New Zealand. During the year, approximately 1,310 feet of gold tubing of all types were constructed—an increase of approximately 17 per cent. over the previous year.

The following table sets out the distribution to various centres in Australia and New Zealand of gold tubing constructed during the year:—

GOLD TUBING ISSUES TO RADON CENTRES 1960-61.

Radon Centre.	Gold Capillary. 0.3 mm Pt. eq.	Gold Capillary. 0.5 mm Pt. eq.	Gold Casing for Needles. 0.8 mm Pt. eq.
Melbourne .. .. ..	(ft.) 666½	(ft.) ..	(ft.) 10½
Sydney .. .. ..	49½	43½	7½
Brisbane .. .. ..	..	533½	..
Christchurch .. .. ..	..	..	..
Total 1960-61 .. .. ..	715¾ (556)	577 (555)	17½ (6)
(Total 1959-60) .. .. ..			

In addition, twelve nasal applicators, six industrial sources and twelve new radon tubes (for stock), were constructed.

Other statistical data on the Radon Services of the Laboratory are contained in Tables 2 and 3 on pages 100 and 101.

### X-RAY SERVICES

The functions of the Laboratory include the physical aspects of the use of x-rays in treatment and in diagnosis.

**X-Ray Therapy:** The Laboratory maintains the Australian free-air standard chamber for the precise realization of the roentgen. The portable sub-standard dosimeters used by the local physical services in each State are calibrated by reference to this standard.

By arrangement with the National Bureau of Standards, Washington, D.C., U.S.A., the Laboratory standard has been compared with transfer chambers made available by the Bureau as part of an international comparison of similar standards set up by other countries. This method of comparison of standards is being co-ordinated by the International Commission on Radiological Units and Measurements. The results of the comparison are at present being assessed.

The calibration of dosimeters is not restricted to those owned by the local physical services; privately-owned dosimeters are calibrated by arrangement. The Laboratory may also repair sub-standard and other dosimeters when necessary. Inspection and adjustment of dosimeters when necessary are routine procedures before calibration. Seven dosimeters have been calibrated in the past twelve months.

Six calibrations of deep-therapy equipment, and nineteen of superficial-therapy equipment have been made by the Laboratory. Radiographic examinations of the fields of all new treatment cones supplied with therapy equipments is a routine test. When a defective treatment cone is discovered the Laboratory collaborates with the manufacturers in correcting the fault.

Investigations of physical aspects of radiotherapy are carried out in close association with the Radiotherapy Advisory Committee of the National Health and Medical Research Council.

Seven samples of biological materials have been irradiated for the Department of Zoology, University of Melbourne.

**X-Ray Equipment:** Advice on the purchase of new equipment for hospital departments and on the condition of existing equipment is frequently sought from the Laboratory by State Governments and hospital authorities. The Laboratory undertakes acceptance tests on new equipment when requested. Assistance has been given to the Department of External Affairs in purchasing x-ray equipment of Australian manufacture for export under the Colombo Plan. In all cases the equipment has been inspected before despatch to ensure that it complies with specifications.

The Laboratory has been consulted about the purchase of x-ray equipment and accessories for the States which, in accordance with the provisions of the Tuberculosis Arrangement between the Commonwealth and the States, have requested the Commonwealth to reimburse them for the expenditure to be incurred. There has been considerable demand for the services of the Laboratory in this respect arising from the current programmes to replace 35 mm. lens cameras with 70 mm. mirror cameras and to provide mobile x-ray units for mass x-ray survey work.

The Laboratory has also been responsible for supervising the purchase of x-ray accessories for use in Immigration Centres.

## RADIO-ISOTOPE SERVICES

Since 1946, when artificially-produced radio-isotopes first became regularly available from overseas sources the Laboratory has procured and distributed in Australia radio-isotopes for medical, industrial and research purposes. Some stable isotopes have also been imported.

The Laboratory maintained the service of processing and distributing radio-isotopes used in Australia. During the year the Laboratory procured 1,143 shipments of 65 different isotopes (of which nine were stable isotopes). In the year 1959-60, the corresponding figures were 828 and 62, respectively. Of the 1,134 shipments of radioactive-isotopes procured, 39.2 per cent. were used for medical purposes, 3.0 per cent. for industrial purposes and 57.8 per cent. for research purposes. The corresponding figures for 1959-60 were 47.5 per cent., 2.4 per cent. and 50.1 per cent., respectively.

The radio-isotopes for medical purposes are in general obtained in bulk. Individual patient doses are dispensed at the Laboratory and issued to users throughout Australia.

A total of 8,693 doses of radio-isotopes (an increase of 19 per cent. over the previous year), identified with particular patients, times and dates of use, were issued during the year. The number of individual patient doses of radio-isotopes dispensed and issued by the Laboratory over the last eight years have been—

Year.					Number of doses.
1953-54	..	..	..	..	774
1954-55	..	..	..	..	1,672
1955-56	..	..	..	..	3,334
1956-57	..	..	..	..	5,637
1957-58	..	..	..	..	6,278
1958-59	..	..	..	..	6,376
1959-60	..	..	..	..	7,295
1960-61	..	..	..	..	8,693

These doses of radio-isotopes are made available at no charge, for all classes of patients, under Section 100 of the National Health Act.

Isotopes used in Australia have, in the past, been obtained mainly from the United Kingdom, Canada and the United States of America. Some special materials have been obtained from other countries such as France, Holland and Israel. However, during the year, the Australian Atomic Energy Commission was in a position to prepare, in its own reactor, some of the radio-isotopes required for various purposes in Australia. Some of the radio-isotopes procured by the Laboratory during the year were obtained from that source.

The Laboratory provides an advisory service on the availability of radio-isotopes, on technical aspects of their use, and on the potential health hazards and the methods of reducing them.

Apart from the advisory service which the Laboratory provides in the field of application of radio-isotopes in medicine, the Laboratory actively participates in the physical aspects of the use of radio-isotopes at the Royal Melbourne Hospital and in the Professorial Unit of the Department of Medicine, University of Melbourne, at the Royal Melbourne Hospital.

The number of issues of iodine-131 as iodide for diagnostic tests of thyroid function has continued to increase. The increase, compared with the previous year, is 21 per cent. but the total activity of iodine-131 issued for this purpose has decreased by one per cent. This indicates the desirable feature of a continued trend to lower diagnostic doses as more sensitive measuring equipment comes into use.

Radio-colloidal gold-198 for the treatment of peritoneal and pleural effusions associated with malignancies has now been almost completely replaced by colloidal zirconium phosphate labelled with phosphorus-32. In the year 1960-61 only six issues of radio-colloidal gold were made for the above-mentioned purposes, compared with 34 issues in the previous year and 55 issues in the peak year of 1957-58.

During the year ten issues of iodine-131-labelled polyvinyl pyrrolidone were made from material supplied without cost from the U.S. National Institute of Health through the courtesy of Dr. R. S. Gordon.

## RADIATION PROTECTION SERVICES

The expanding use of radiation and radioactive substances in medicine, research and industry and consideration of possible public health problems arising from these uses have resulted in increased work for the various protection services of the Laboratory. Specifications of the radiation protection requirements of twelve medical x-ray departments and two research establishments were carried out involving detailed discussions with architects and radiologists and the planning of lay-out of radiation equipment. Radiation surveys were carried out in 21 radiation facilities. The lead-equivalent was measured of 55 samples of lead-filled rubber and lead-filled plastic protective garments for use in x-ray practice.

The Laboratory has, for many years, provided a film-badge monitoring service through which the radiation dose of those occupationally exposed to radiation may be assessed.

In September, 1960, the Laboratory introduced a more comprehensive film-badge service. In the new procedure, metal film-holders (badges) of special design are issued to institutions on loan for use by those engaged in radiation work. Special films are issued from the Laboratory each fortnight to all those registered in the service and upon their return, after being worn for a working period of two weeks, they are processed and the radiation dose received for the period by each individual is assessed. A report is issued to the employer in each case and, in addition, the Laboratory maintains a cumulative record of radiation dose of the individuals. This record permits the attention of the employer to be drawn to any radiation doses in excess of the levels laid down for such radiation workers. The service is available to all; the only charge made is that, at cost, for the films issued. The number of institutions registered in the film-badge service rose from 149 at the beginning of the year to 258 at the end of the year. The number of films assessed in the year was 26,238 compared with 21,351 for the previous year. The increase in the number of radiation workers now covered by the film-badge monitoring service of the Laboratory is not truly reflected in these figures, since in the year 1959-60 the films were normally worn for a weekly period only compared with the fortnightly wearing with the modified service.

During the year a course of lectures on Radio-active Isotopes and their use in Medicine was conducted by members of the staff of the Laboratory for twelve pharmaceutical chemists.

**Radio-chemical and Low-level Counting Facilities:** Following the recommendation of July, 1959, of the National Radiation Advisory Committee, special radio-chemical and low-level counting facilities have been provided at the

Laboratory. The facilities when fully equipped and staffed will permit the radioactive assay of various radioactive substances present in minute amounts in environmental samples such as water and soil, in foods such as milk, grain, &c., in biological material such as human bone tissue and in industrial effluent.

The equipment already installed and in use includes a special counting equipment designed and constructed in the Laboratory to reduce the radiation background of the counters to a very low level, thus permitting improved accuracy in the assay of radioactive samples at low levels of activity.

The Laboratory continued to assist the Atomic Weapons Trials Safety Committee in its Australia-wide monitoring programme for fall-out. As part of this assistance, 1,080 samples of various materials were ashed and compounded for radio-chemical assay during the year.

TABLE 1  
RADIUM SERVICES  
1st July, 1959, to 30th June, 1961

Item.	Quantity.	
	1960-1961.	1959-1960.
1. Total movement of Commonwealth Radium (mgm) .. ..	2,046	488
2. Quantity of radium measured (mgm) .. ..	614	35
3. Number of radium containers tested—		
Commonwealth .. .. .. .. ..	38	650
Private .. .. .. .. ..	14	8
4. Number of searches for lost radium or radon containers .. ..	1	1

TABLE 2  
RADON SERVICES  
1st July, 1959, to 30th June, 1961  
Quantities of Radon issued are those at time of use

Item.	Quantity.	
	1960-1961.	1959-1960.
1. Radon issued for all purposes (mc) .. .. .. ..	39,360	32,150
2. Radon issued for treatment purposes only (including items 11 and 12) (mc) .. .. .. ..	29,924	30,316
3. Total number of patients treated (not including items 11 and 12) ..	664	687
4. Radon issued to hospitals (mc) .. .. ..	20,311	17,993
5. Location of hospitals to which radon was issued—		
Metropolitan .. .. .. .. ..	7	6
Country .. .. .. .. ..	9	11
Interstate .. .. .. .. ..	3	4
6. Radon issued to private practitioners (including items 11 and 12) (mc)	9,613	12,323
7. Location of private practitioners to whom radon was issued—		
Metropolitan .. .. .. .. ..	12	14
Country .. .. .. .. ..	4	3
Interstate .. .. .. .. ..	4	4
8. Containers issued (including only capillary implants, needles and tubes of all classes) .. .. .. ..	4,781	5,846
9. Returnable containers not returned .. .. .. ..	1	10
10. Implants (0.5 mm Pt. eq.) received* from Sydney—		
Number .. .. .. .. ..	62	174
Total radon (mc) .. .. .. .. ..	50	121

TABLE 2—*continued.*

Item.	Quantity.	
	1960-1961.	1959-1960.
11. Nasal applicators—		
Number issued ..	..	..
Total radon (mc) ..	..	..
Total patients treated ..	..	..
12. Radon plates (eye applicators)—		
Number issued ..	..	..
Total radon (mc) ..	..	..
Total patients treated† ..	..	..
13. Industrial sources—		
Number issued ..	..	..
Total radon (mc) ..	..	..
14. Radon issued for research purposes (mc) ..	..	..
15. Total radon extracted from solution (mc) ..	..	..
16. Total radon at time of use (mc) ..	..	..
Item 16		
17. Ratio ————— x 100 ..	..	..
Item 15		
18. Number of purifications ..	..	..

\* Victorian requirements of radon in gold capillary of 0.5 mm Pt. eq. filtration are obtained from the Bureau of Physical Services, Sydney. The quantities shown are not included in any other entry of this table.

† Approximate values.

TABLE 3  
RADON SERVICES, CENTRES OTHER THAN C.X.R.L.  
Quantities of Radon issued are those at time of use

Item.	Quantity.	
	1960-1961.	1959-1960.
(a) Sydney—		
1. Radon issued—		
Hospitals (mc) ..	..	..
Private Practitioners (mc) ..	..	..
Research purposes (mc) ..	..	..
2. Total radon extracted from solution (mc) ..	..	..
3. Total radon at time of use (mc) ..	..	..
Item 3		
4. Ratio ————— x 100 ..	..	..
Item 2		
5. Number of purifications ..	..	..
(b) Brisbane—		
1. Radon issued—		
Hospitals (mc) ..	..	..
Private Practitioners (mc) ..	..	..
Research purposes (mc) ..	..	..
2. Total radon extracted from solution (mc) ..	..	..
3. Total radon at time of use (mc) ..	..	..
Item 3		
4. Ratio ————— x 100 ..	..	..
Item 2		
5. Number of purifications ..	..	..

TABLE 4  
USEFUL RADON YIELD

Centre.	Radium in Solution (mgm)	Total Radon Issued (mc.)	Useful Yield (mc/mgm).
Melbourne .. .. ..	2,615	39,360	15.1
Sydney .. .. ..	877	8,868	10.1
Brisbane .. .. ..	933	19,004	20.4

TABLE 5  
DISTRIBUTION OF IMPORTED RADIOACTIVE ISOTOPES

Year.	Industrial.		Medical.		Research.		Total.	
	No. of Shipments.	Activity (mc.)						
1960-61..	34	127,980	445	17,195	655	177,664	1,134	322,839
1959-60..	20	48,470	389	22,122	411	264,287	820	334,879
<i>Proportion of Total Imports (Per cent.).</i>								
1960-61..	3.0	39.7	39.2	5.3	57.8	55.0	100	100
1959-60..	2.4	14.4	47.5	6.6	50.1	79.0	100	100

NOTE.—In addition to the 1,134 shipments of radioactive isotopes procured directly by the Laboratory during the year for use in medicine, research and industry, 90 Clearance Certificates, required under Item 23 of the Third Schedule of the Customs (Prohibited Imports) Regulations, were issued through the Laboratory.

TABLE 6  
DISTRIBUTION OF ISOTOPES FOR MEDICAL USE

In this table the word "issue" denotes an isotope container despatched from the Laboratory. The isotope in the container may consist of either an individual dose, or a bulk issue from which individual doses will be dispensed. The number of patients treated will therefore be at the least as great as the number of issues.

Isotope.	Chemical Form.	Use.	1960-61.		1959-60.	
			No. of Issues.	mc at Use.	No. of Issues.	mc at Use.
Au <sup>198</sup> ..	Colloidal gold ..	Therapy ..	6	1,016	34	4,402
C <sup>14</sup> ..	Glycerol tripalmitate	Diagnosis ..	1	3	0	0
Co <sup>57</sup> ..	Vitamin B.12 ..	Diagnosis ..	10	0.01	0	0
Co <sup>58</sup> ..	Vitamin B.12 ..	Diagnosis ..	72	0.33	132	0.6
Cr <sup>51</sup> ..	Chromate in isotonic saline ..	Diagnosis ..	895	119	723	104
Fe <sup>59</sup> ..	Ferric chloride ..	Diagnosis ..	140	1.3	88	1.0
H <sup>3</sup> ..	Gas ..	Diagnosis ..	1	100	0	0

TABLE 6—*continued*

Isotope.	Chemical Form.	Use.	1960-61.		1959-60.	
			No. of Issues.	mc at Use.	No. of Issues.	mc at Use.
I <sup>131</sup> ..	Iodide ..	Therapy—				
		General ..	565	6,285	475	6,057
		Carcinoma ..	28	2,016	21	1,798
		Diagnosis ..	6,352	181	5,241	183
		Diagnosis ..	3	1.8	4	1.4
		Diagnosis ..	1	1.9	0	0
		Diagnosis ..	4	4.8	0	0
		Human serum albumin ..	140	92.4	89	65
		Hypaque ..	1	2.3	0	0
		Oleic acid ..	28	17.6	19	15.5
		Olive oil ..	2	4	0	0
		Polyvinyl pyrrolidone ..	10	4	16	2.15
		Rose bengal ..	2	1.5	0	0
		L-thyroxine ..	2	1.1	0	0
		L-tri-iodothyronine ..	1	0.5	6	1.4
		Triolein ..	68	53	48	44
		Total I <sup>131</sup> ..	7,207	8,657	5,919	8,167
P <sup>32</sup> ..	Orthophosphate in hydrochloric acid	Therapy ..	276	1,260	287	1,372
		Diagnosis ..	37	41	34	16
		Therapy ..	0	0	52	451
		Tracer ..	4	2.4	5	12.3
		Therapy ..	43	395	21	215
S <sup>35</sup> ..	Congo red ..	Total P <sup>32</sup> ..	360	1,697	399	2,066
		Diagnosis ..	1	0.7	0	0

TABLE 7

**Isotopes Made Available for Use in Research from Bulk Stocks Purchased for Medical Use During 1959-60 and 1960-61 \***

Isotope.	Chemical Form.	1960-61.		1959-60.	
		No. of Issues.	mc at Issue.	No. of Issues.	mc at Issue.
Co <sup>58</sup> ..	Vitamin B.12 ..	0	0	2	0.12
Cr <sup>51</sup> ..	Chromate in isotonic saline	30	9.8	2	0.12
Fe <sup>59</sup> ..	Chloride in isotonic saline	3	0.005	3	0.03
I <sup>131</sup> ..	Iodide ..	116	216	110	129
P <sup>32</sup> ..	Orthophosphate ..	102	375	90	174
P <sup>32</sup> ..	Chromic phosphate ..	2	1.4	0	0

\* The table presents data on the issues made for research in the physical and biological sciences and for investigations of production problems in industry.

TABLE 8  
ISOTOPE SERVICES

Isotopes procured by the Laboratory—1st July, 1960, to 30th June, 1961

In the case of isotopes required for medical use, the quantities given are those at time of arrival at the Laboratory; in all other cases, the quantities given are those at time of despatch from the overseas centre.

Isotope.	Number of Shipments Received.	Quantity mc.	Use.*	Notes.
Ag <sup>110</sup> ..	2	5	R	
Am <sup>241</sup> ..	1	10	R	
	1	0.01	R	
As <sup>73</sup> ..	1	..	R	
Au <sup>198</sup> ..	7	1,515	M	
	1	1	R	
Ba <sup>133</sup> ..	2	1.5	R	
Ba <sup>140</sup> ..	4	301	R	
Be <sup>7</sup> ..	8	35	R	
Br <sup>82</sup> ..	1	10	R	
C <sup>14</sup> ..	1	3	M	
	14	..	R	14 reference sources
	264	165	R	109 different compounds
Ca <sup>45</sup> ..	11	7.9	R	
Ca <sup>47</sup> ..	1	0.2	R	
Ce <sup>144</sup> ..	3	20	R	
Cl <sup>36</sup> ..	2	0.1	R	
Co <sup>57</sup> ..	1	0.01	M	Vitamin B12
	1	1	R	
Co <sup>58</sup> ..	8	0.38	M	Vitamin B12
	1	0.02	R	Vitamin B12
Co <sup>60</sup> ..	15	80	R	
	3	2,220	I	
Cr <sup>51</sup> ..	27	185	M	
	14	44	R	
Cs <sup>137</sup> ..	1	..	M	44 needles (48 mgm radium-equivalent)
	10	5,040	R	
	4	..	R	4 reference sources
	1	..	R	Calibration source
	1	2,500	I	
Fe <sup>55</sup> ..	1	0.05	R	
Fe <sup>59</sup> ..	5	2.5	M	
	9	2.68	R	
H <sup>3</sup> ..	1	100	M	Gas
	8	50,000	R	Gas
	10	110,200	R	Tritiated Water
	38	1,683	R	16 different compounds
	2	..	R	4 targets
	3	..	R	Wilzbach tritiation of 3 different compounds
Hg <sup>203</sup> ..	1	3	I	As Chloride
I <sup>131</sup> ..	67	11,961	M	Iodide
	4	504	R	Iodide
	3	3	M	Diodrast
	135	153.3	M	Human Serum Albumin
	34	17.2	R	Human Serum Albumin
	26	28	M	Oleic Acid
	5	7.5	M	Poly-Vinyl Pyrrolidone
	1	0.5	M	L-tri-iodothyronine
	4	2	R	L-tri-iodothyronine
	2	6	M	Olive Oil
	1	3	M	Gamma Globulin
	2	2.5	M	Rose Bengal

\* I—Industrial; M—Medical; R—Research (including research in the physical and biological sciences and investigations of production problems in industry).

TABLE 8—*continued*

Isotope.	Number of Shipments Received.	Quantity mc.	Use.*	Notes.
I <sup>181</sup> — <i>continued</i> ..	68	93	M	Triolein
	6	6	R	Triolein
	2	1.5	M	Thyroxine
	1	3	M	Hypaque
	3	8	M	Hippuran
	2	..	M	4 reference sources
	1	..	R	1 reference source
In <sup>114</sup> ..	1	1	R	
Ir <sup>192</sup> ..	3	6,555	R	
	19	119,550	I	
K <sup>42</sup> ..	3	21	R	
Kr <sup>85</sup> ..	7	3,605	I	
Mn <sup>54</sup> ..	3	0.4	R	
Na <sup>22</sup> ..	15	9.2	R	
Na <sup>24</sup> ..	12	0.65	R	
P <sup>32</sup> ..	27	1,991	M	Orthophosphate in HCl
	16	157	R	Orthophosphate in HCl
	3	3	M	Colloidal Chromic Phosphate
	31	507	M	Colloidal Zirconium Phosphate
	1	20	R	Sodium Dihydrogen Phosphate
	2	4	R	Sodium Pyrophosphate
Pb <sup>210</sup> (RaD) ..	3	0.5	R	
Pm <sup>147</sup> ..	7	86	R	
Po <sup>210</sup> ..	4	1,021	R	
Pu <sup>239</sup> ..	2	..	R	2 reference sources
Ra <sup>226</sup> ..	1	..	R	1 mgm. standard
	6	..	R	Foils
	1	2	I	Foils
Ra <sup>226</sup> (+ Be) ..	2	..	R	5 neutron sources containing a total of 13 mgm Ra <sup>226</sup>
Rb <sup>86</sup> ..	1	10	R	
Ru <sup>106</sup> ..	3	40	R	
S <sup>35</sup> ..	1	0.7	M	Congo Red
	35	217	R	13 different compounds
Sb <sup>124</sup> (+ Be) ..	1	..	R	Neutron source containing 1 curie Sb <sup>124</sup>
Sc <sup>46</sup> ..	1	1	R	
Sn <sup>113</sup> ..	2	2	R	
Sr <sup>85</sup> ..	5	5.7	R	
Sr <sup>89</sup> ..	5	7	R	
Sr <sup>90</sup> ..	10	500	M	Plates and plaques
	6	26	R	Plates and plaques
	3	105	M	
Te <sup>132</sup> ..	1	12	M	
Th <sup>228</sup> ..	2	..	R	Reference sources
Tl <sup>204</sup> ..	4	3	R	Reference sources
Xe <sup>133</sup> ..	8	202	R	
Y <sup>91</sup> ..	1	5	R	
Zn <sup>95</sup> ..	3	21	R	
Mixed fission products ..	1	1	R	

*Irradiation Units*

Hg <sup>203</sup> ..	1	..	I	20 gm
K <sup>42</sup> ..	2	1	R	
S <sup>35</sup> ..	2	..	R	
Sb <sup>124</sup> ..	1	100	I	
Tl <sup>204</sup> ..	1	..	R	19 gm

\* I—Industrial; M—Medical; R—Research (including research in the physical and biological sciences and investigations of production problems in industry).

TABLE 8—*continued*

Isotope.	Number of Shipments Received.	Quantity mc.	Use.*	Notes.
<i>Stable Isotopes</i>				
C <sup>13</sup>	..	1	..	R
Ca <sup>40</sup>	..	1	..	R
Ca <sup>46</sup>	..	1	..	R
Fe <sup>54</sup>	..	1	..	R
K <sup>39</sup>	..	1	..	R
Li <sup>7</sup>	..	1	..	R
N <sup>15</sup>	..	1	..	R
Ne <sup>20</sup>	..	1	..	R
2 gm as Ammonium Nitrate 40 targets				

\* I—Industrial; M—Medical; R—Research (including research in the physical and biological sciences and investigations of production problems in industry).

## PUBLICATIONS AND LECTURES

### 1960-61

#### *Papers*

POLYANION EQUILIBRIA IN AQUEOUS SOLUTION. PART 1. THE QUANTITATIVE ANALYSIS OF ACIDIFIED TUNGSTATE SOLUTIONS. J. F. Duncan and D. L. Kepert, *Journal of the Chemical Society*.

POLYANION EQUILIBRIA IN AQUEOUS SOLUTION. PART II. A THERMODYNAMIC STUDY OF THE PARATUNGSTATE A ANION. J. F. Duncan and D. L. Kepert, *Journal of the Chemical Society*.

#### *Lectures*

DISTRIBUTION OF RADIO-ISOTOPES FOR MEDICAL PURPOSES. D. J. Stevens, to nurses attending a course on Radiotherapeutic Nursing conducted by the Cancer Institute Board of Victoria, 12th July, 1960.

RADIATION HAZARDS. D. J. Stevens, to Victorian Branch, British Medical Association, 3rd August, 1960.

A REVIEW OF SOME ASPECTS OF RADIOLOGICAL PHYSICS. D. J. Stevens, Eleventh Annual Meeting, College of Radiologists of Australasia, 25th October, 1960.

PROTECTION IN DENTAL RADIOGRAPHY. J. F. Richardson, to students at the Dental Hospital, Melbourne, 8th March, 1961.

RADIATION PROTECTION PROBLEMS IN THE USE OF RADIO-ISOTOPES IN MEDICINE. J. F. Richardson, at a Symposium on "The Use of Radioactive Isotopes in Medicine", arranged by the Royal Australasian College of Physicians, 25th March, 1961.

INTENSIFYING SCREENS AND HIGH KILOVOLTAGE. D. J. Grant, Twelfth Annual Congress of the Australasian Institute of Radiography, 11th April, 1961.

RADIO-ISOTOPES FOR PHARMACEUTICAL CHEMISTS. A course of twenty lectures held at C.X.R.L. for pharmaceutical chemists, August to October, 1960. The course was arranged at the request of the Victorian College of Pharmacy.

## COMMONWEALTH ACOUSTIC LABORATORIES

The Commonwealth Acoustic Laboratories, with its head-quarters in Sydney and branch laboratories in every State capital, continued where necessary to equip with Calaid hearing aids, deaf children, Repatriation cases, Service personnel and others entitled to receive them. A total of 7,461 new patients attended the laboratories, bringing the total number who have received assistance since the establishment of the service to 63,088. Of the new attendances, 1,857 were fitted with Calaids, bringing the total number of fittings to 14,395. Of these, 8,810 are Repatriation patients, 5,336 are children, 104 are Social Service cases, 86 adolescents and 58 Service men and women.

### NEW DEVELOPMENTS

With the return of Dr. B. B. Harold, Ph.D., and Dr. R. H. Farrant, Ph.D., on completion of their doctorates overseas, new tests have been instituted for more difficult cases. These include—

- A new method of bone conduction to overcome difficulties of masking (Rainville Test).
- Introduction of a series of tests for the differential diagnosis of language disorders.
- Informal testing methods involving combined visual and auditory methods to assist in the testing of very young children.
- The development of specially recorded informal tests for very young children.
- Development of tests of motor ability to assist in the differential diagnosis of language disorders.
- The introduction of the Snijders-Oomen test as a test of intelligence.
- The standardization of recorded speech tests with Australian voices and the extended use of such tests.
- Preliminary investigations into the effectiveness of a binaural fusion test (Matsker test) for differential diagnosis of senile deafness.
- Current investigation into possible deterioration through the use of powerful hearing aids.

### HEARING AIDS

Induction coils have been fitted into Calaids to assist in pick-up of loop systems in schools, churches, theatres and from television and telephones, making reception much more intelligible particularly for the severely deaf. Investigations are being made into head worn types of hearing aids to see if they can be produced with sufficient efficiency and economy to be used as part of the Calaid scheme. Incorporation of newer transistor developments has led to increased efficiency in certain models of the Calaid.

### NOISE

A comprehensive report on "Noise and Hearing Conservation in the R.A.A.F." covered also the industrial activities, and this report has been followed up with the institution of hearing conservation programmes throughout all the Air Force Bases. The method developed for attack on R.A.A.F. problems is being extended generally throughout other Commonwealth activities and industry. A series of earmuffs have been developed for efficient protection against various noise exposures.

For special cases of difficulty in fitting the standard ear plug size, custom-made ear plugs have been developed using silicone and such materials following up investigations with various impression substances over the last two years. The extra comfort of these custom-made ear plugs may also assist in acceptance when ear plugs are used for very long periods.

Sound analysis equipment has been extended to all States to assist in determining harmful noise exposure levels.

### TRAINING AND GUIDANCE

Deaf pre-school children receive training and guidance in specially equipped classrooms in each of the State Acoustic Laboratories. The equipment is constantly being added to as successful experimentation is completed in Sydney.

### ULTRASONICS

Investigations of the use of ultrasonics in otology have extended to calibrating and investigating commercial apparatus and in improving the efficiency of this apparatus for local use. A completely new development of much simpler and more efficient apparatus is being undertaken. Initial operations have begun in the use of ultrasonics for the curing of vestibular symptoms of Meniere's Disease without destroying hearing, in conjunction with specialists at the St. Vincent's Hospital. It is hoped that these technical developments will result in a much more efficient and simplified operation leading to many more cases undergoing operations before hearing deteriorates to any degree.

Echoscope apparatus for the visualization of abdominal masses using ultrasonics is undergoing final tests before preliminary trials at the Royal Hospital for Women.

Three dimensional scanning apparatus for the use of ultrasonics in ophthalmology has been designed and is being constructed. This apparatus will also be useful for initial trials for the use in detecting cancers, particularly breast cancers.

### PUBLICATIONS AND LECTURES

#### *Papers*

THE AUDIOMETRIC TESTING OF CHILDREN IN SCHOOLS AND KINDERGARTENS. R. H. Farrant. *The Journal of Auditory Research*, U.S.A. Vol. I., 1950, pp. 1-24.

#### *Lectures on Noise and Hearing Conservation*

The Australian Institute of Mining and Metallurgy, Broken Hill. J. A. Rose, July, 1960.

The National Association of Women, S.A. Branch, Adelaide. J. A. Rose, July, 1960.

The Industrial Safety Sub-Committee of the National Safety Council, Adelaide. J. A. Rose, July, 1960.

The Industrial Safety Convention, Melbourne (University). J. A. Rose, February, 1961.

THE SUBJECTIVE EFFECTS OF NOISE. N. E. Murray, to combined meeting of Aviation Medical Section, B.M.A., at Melbourne, 16th May, 1961.

THE STUDY OF COMMUNICATION DISORDERS AT NORTHWESTERN UNIVERSITY. R. H. Farrant, to N.S.W. Branch, Australian College of Speech Therapists, 2nd June, 1961.

HEARING CONSERVATION IN THE FORGING INDUSTRY. N. E. Murray, to Drop Forging Association of Australia, 23rd June, 1961.

*Talks and Demonstrations at Laboratory*

DIFFERENTIAL DIAGNOSIS OF CHILDREN WITH LANGUAGE DISORDERS. B. B. Harold and R. H. Farrant, to Doctors and Sisters of Children's Hospital, 22nd January, 1960.

THE DEAF CHILD IN A NORMAL SCHOOL. B. B. Harold, to Education Department School Councillors and to Trainee Teachers of the Deaf, 8th August, 1960.

BASIC AUDIOMETRY. B. B. Harold and R. H. Farrant, to Teachers at St. Gabriel's Deaf School, 17th April, 1961.

HEARING TESTS IN SCHOOLS. R. H. Farrant, to School Medical Service Sisters, 15th May, 1961.

TESTING HEARING OF INFANTS. B. B. Harold, to Trainee Teachers, 16th May, 1961.

LIPREADING FILMS. B. B. Harold, to Trainee Teachers, 19th May, 1961.

ON DEAFNESS IN CHILDREN. R. H. Farrant, to Occupational Therapy Students, School Medical Service Nurses, Castle Hill Teachers of the Deaf, May, 1961.

A talk and demonstration was given to Medical Officers of the Joint Coal Board, Sydney. J. A. Rose, May, 1961.

OBJECTIVE MEASUREMENT OF SUBJECTIVE EFFECTS OF NOISE. N. E. Murray, to combined meeting of Industrial Hygiene Division, Qantas, D.C.A., R.A.A.F., 2nd June, 1961.

**SUMMARY OF CLINICAL ACTIVITIES**

**1st July, 1959, to 30th June, 1961**

		1959-60.	1960-61.
<b>1. New Cases Attending Laboratories—</b>			
Children ..	..	2,791	3,273
Repatriation ..	..	2,068	2,435
Miscellaneous ..	..	820	681
Social Services ..	..	20	17
Army ..	..	98	112
Royal Australian Air Force ..	..	92	230
Navy ..	..	56	58
Directors of Health ..	..	131	141
<b>Total</b>	..	<b>6,076</b>	<b>6,947</b>
<b>2. Civil Aviation Referrals—</b>			
New ..	..	462	513
Repeat ..	..	2,667	2,660
<b>Total</b>	..	<b>3,129</b>	<b>3,173</b>
<b>3. Aid Fittings—</b>			
Children and Health ..	..	712	660
Repatriation ..	..	1,064	1,276
Adolescents ..	..	..	40
Social Services ..	..	12	7
Army ..	..	13	5
Royal Australian Air Force ..	..	..	6
Navy ..	..	1	..
<b>Total</b>	..	<b>1,802</b>	<b>1,994</b>

COMMONWEALTH ACOUSTIC LABORATORIES—*continued.*

—	1960.	1961.
<b>4. Total Aids on Issue at 30th June—</b>		
Repatriation .. .. .. .. ..	7,160	8,197
Health .. .. .. .. ..	1,530	1,747
Children .. .. .. .. ..	3,048	3,464
Social Services .. .. .. .. ..	45	22
Army .. .. .. .. ..	33	36
Royal Australian Air Force .. .. .. .. ..	7	12
Navy .. .. .. .. ..	4	4
Northern Territory Administration .. .. .. .. ..	..	1
<b>Total .. .. .. .. ..</b>	<b>11,827</b>	<b>13,483</b>

## COMMONWEALTH BUREAU OF DENTAL STANDARDS

### STANDARDS

In the sphere of standardization, the Commonwealth Bureau of Dental Standards has participated to the extent that twenty-one recognized Australian Standards are now available. The ones added this year through the Standards Association of Australia represent a wide range:—

- Australian Standard T.17—Dental Modelling Wax.
- Australian Standard T.18—Dental Impression Paste.
- Australian Standard T.19—Anaesthetics for Dental Injection.
- Australian Standard T.20—Synthetic Resin Teeth.
- Australian Standard T.21—Dental X-ray Film.

Standards for casting investment, hand instruments and hypodermic needles are almost complete. Specifications for casting golds, cements, modelling compound and laboratory plaster have been modified.

Assistance has been given in the development of further international dental standards.

### TESTING

Testing reports were issued on 515 samples distributed as follows:—

Mineral products .. .. .. .. ..	..	66
Cements .. .. .. .. ..	..	36
Waxes and impression materials .. .. .. .. ..	..	70
Synthetic resins .. .. .. .. ..	..	64
Metals and alloys .. .. .. .. ..	..	185
Surgical and therapeutic materials .. .. .. .. ..	..	14
Instruments .. .. .. .. ..	..	90

Of these 23 were tested for public instrumentalities, 66 for overseas firms and most of the remainder for Australian manufacturing or distributing companies. The results of tests of many products obtained on the open market were published and this evoked an immediate response from a number of manufacturers and importers who have now succeeded in bringing their materials into line with the appropriate Australian Dental Standard requirements.

## RESEARCH

Investigational projects include the retardation of gypsum plasters, failures in stainless steel surgical implants, methods for preparing artificial heart valves, the stability of anaesthetic solutions, the welding of orthodontic appliances, the manufacture of silver amalgam alloys, epoxy resin adhesives, testing tungsten carbide burs and stainless steel wires.

## TRAINING

Further assistance has been given in the training of dental students and graduates working for higher degrees; as usual, there have been the numerous consultations by all sections of dentistry.

Postgraduate courses on amalgam restorations and on inlays were given at the University of Sydney and lectures given at various centres.

## INFORMATION

An outstanding informative project during the year was the preparation of a special issue of the Australian Dental Journal devoted to the work of the Bureau. In all, sixteen papers were published providing information on the quality of materials and their clinical use. This issue was particularly successful and created an unprecedented demand for copies.

Another successful venture was the printing and distribution to members of the profession of a series of seven "Practical Guides". These showed in a step-by-step fashion the proper clinical use of silver amalgams, cements, impression materials, plasters and stones, denture resins, waxes and casting materials.

## PUBLICATIONS

THE COMMONWEALTH BUREAU OF DENTAL STANDARDS AND ITS CONTRIBUTION TO AUSTRALIAN DENTISTRY. A. R. Docking, *Aust. Dent. J.*, Vol. 5, pp. 248-253 (Oct.) 1960.

DENTAL PRODUCTS CONTAINING GLASS FIBRE, Current Notes No. 45. *Aust. Dent. J.*, Vol. 5, pp. 260-261 (Oct.) 1960.

ZINC OXIDE EUGENOL IMPRESSION PASTES. Joan A. Donnison, *Aust. Dent. J.*, Vol. 5, pp. 262-263 (Oct.) 1960.

A CALORIMETRIC STUDY OF THE HYGROSCOPIC SETTING OF CALCINED GYPSUM. Joan A. Donnison, M. P. Chong, and A. R. Docking, *Aust. Dent. J.*, Vol. 5, pp. 269-272 (Oct.) 1960.

GYPSUM PRODUCTS. A. L. Ware and V. G. McLaverty, *Aust. Dent. J.*, Vol. 5, pp. 273-279 (Oct.) 1960.

ALGINATE IMPRESSION MATERIALS. Joan A. Donnison and A. R. Docking, *Aust. Dent. J.*, Vol. 5, pp. 280-281 (Oct.) 1960.

THE TESTING OF TUNGSTEN CARBIDE BURS. M. P. Chong and A. R. Docking, *Aust. Dent. J.*, Vol. 5, pp. 282-284 (Oct.) 1960.

AN EVALUATION OF DENTAL CEMENTS. J. R. Griffith and A. L. Ware, *Aust. Dent. J.*, Vol. 5, pp. 285-291 (Oct.) 1960.

A NOTE ON THE TESTING OF PORCELAIN TEETH. A. R. Docking and M. P. Chong, *Aust. Dent. J.*, Vol. 5, pp. 292-293 (Oct.) 1960.

THE QUALITY OF LOCAL ANAESTHETIC SOLUTIONS. Joan A. Donnison, *Aust. Dent. J.*, Vol. 5, pp. 294-297 (Oct.) 1960.

THE CONTROL OF DENTAL AMALGAM. A. L. Ware, *Aust. Dent. J.*, Vol. 5, pp. 298-305 (Oct.) 1960.

SOME EXPERIMENTS ON THE PRECIPITATION OF GYPSUM. A. R. Docking, *Aust. Dent. J.*, Vol. 5, pp. 306-310 (Oct.) 1960.

COMMONWEALTH BUREAU OF DENTAL STANDARDS—COMBINED 12TH, 13TH AND 14TH ANNUAL REPORTS. *Aust. Dent. J.*, Vol. 5, pp. 317-321 (Oct.) 1960.

THE EFFECT OF HIGH TEMPERATURES ON STAINLESS STEEL ORTHODONTIC ARCH WIRE. J. V. Wilkinson (Guest worker), *Aust. Dent. J.*, Vol. 5, pp. 264-268 (Oct.) 1960.

## NATIONAL BIOLOGICAL STANDARDS LABORATORY

The scope and volume of work carried out by the National Biological Standards Laboratory during 1960-61 increased considerably despite difficulties in obtaining staff and restricted accommodation. The staff position has been relieved somewhat during the year by the appointment of officers to take charge of the Endocrine Products Laboratory and Antibiotic Products Laboratory.

**Biological Products Division:** The Antibiotic Products Laboratory programme initiated in 1959-60 of examining all preparations of antibiotics listed as pharmaceutical benefits has been continued in 1960-61. At least one sample of most preparations has now been examined, comprising 223 samples and some 500 bio-assays. Of the samples examined 34 items (15 per cent.) failed to meet the standards of the B.P. 1958 or in the absence of a pharmacopoeial standard, failed to meet a reasonable corresponding standard.

There is an increasing tendency for Australian subsidiaries of overseas manufacturers to undertake their own quality control for antibiotics. A number of quality control chemists have received instruction and advice in the N.B.S.L.'s laboratories in methods of assay. A Colombo Plan travelling Fellow also worked in the laboratory for several months and received instruction in methods of antibiotic assay.

In the Viral Products Laboratory work has been largely restricted to problems related to infectious laryngotracheitis vaccine for poultry. This is of considerable economic importance to the poultry industry. The vaccine produced by two manufacturers in Australia have been regularly examined. The programme had a threefold purpose—

- (1) In the absence of any standard of potency to ensure that vaccines contained sufficient virus to achieve successful vaccination;
- (2) to assess the ability of manufacturers to produce a consistent product; and
- (3) to assess the reliability of methods of determining potency.

Eighteen batches of vaccine were sampled, comprising 91 assays. One batch contained inadequate amounts of virus. This was traced to excess moisture content. This batch was not offered for sale by the manufacturer.

The N.B.S.L. collaborated in field trials of vaccine with the New South Wales Department of Agriculture and has arrived at an interim standard for the vaccine. This has been adopted by the New South Wales Government and by manufacturers. A definitive standard will be presented to the Biological Products Advisory Committee for approval in the near future. The field trial also included an evaluation of egg-grown vaccine and vaccine prepared from tracheal exudate.

As a consequence of the study, the latter type of vaccine will no longer be acceptable in New South Wales. A cell culture method of assaying virus content of I.L.T. vaccine has been developed.

A suitably qualified officer to take charge of the Bacterial Products Laboratory has not yet been found and some of its functions continue to be carried out in the Antibiotic Products Laboratory.

**Pharmaceutical Products Division:** The Analytical Chemistry Laboratory programme of sampling pharmaceuticals (largely pharmaceutical benefits) available in Australia continued. Some 1,052 samples of 65 products from 61 manufacturers were examined. Approximately 24 per cent. of these were below appropriate standards. Approximately one-third of the failures were deficiencies in potency; the other two-thirds were failures due to less serious faults, such as prolonged disintegration, or non-uniformity of weight of tablets or incorrect labelling of products, &c.

Liaison with the pharmaceutical industry, particularly in relation to quality control, was maintained and extended. Thirty-six factories were visited and many representatives of industry visited the N.B.S.L. In a number of instances, quality control chemists from industry spent up to a week in the laboratories.

Analyses were made on behalf of other Commonwealth departments, especially the Department of Territories. The New Guinea area provided a particularly severe test of the quality and packaging of pharmaceutical products.

A basis for liaison with State Departments of Health and Agriculture is being explored and the N.B.S.L. has closely collaborated with the Commonwealth Analyst, Department of Customs, Melbourne.

A survey of thyroid preparations on the Australian market was made. The National Health and Medical Research Council endorsed the recommendation of the N.B.S.L. that thyroxine be substituted for thyroid extract in the Australian practice.

An investigation of the high failure rate of aspirin tablets, because of excess free salicylic acid, resulted in the commencement of a collaborative study with industry on the assay methods for salicylic acid, stability, and packaging, &c., of acetylsalicylic acid.

The Endocrine Products Laboratory commenced work on the standard of insulin products on the Australian market during the latter part of the year.

**Pharmacology Laboratory.**—Following the appointment of an officer to take charge of the Antibiotic Products Laboratory, staff has been released to bring this laboratory into continuous operation. Assays complementary to other sections have been undertaken, as have assays of heparin, vasopressin and insulin.

## COMMONWEALTH HEALTH LABORATORIES

The Commonwealth Health Laboratories, which are located at fifteen points in capital cities and major provincial centres, extending from Townsville to Kalgoorlie, functioned efficiently throughout the year. Their purpose is to assist the local medical profession and the public by the pathological and other examination of clinical specimens taken, to assist the diagnosis of disease that are not otherwise readily identifiable, and in a variety of other ways.

They perform laboratory work of a public health nature, such as the bacteriological and clinical examination of food, milk and water and they investigate outbreaks of disease. They have proved of special value in the investigation of peculiarly local diseases especially in Queensland and the Northern Territory.

Laboratories are located at Albury, Alice Springs, Bendigo, Cairns, Canberra, Darwin, Hobart, Kalgoorlie, Launceston, Lismore, Port Pirie, Rockhampton, Tamworth, Toowoomba and Townsville.

The number of pathological examinations and laboratory tests performed at each laboratory during the years 1959-60 and 1960-61 is as follows:—

Location.	1959-60.	1960-61.
Albury .. .. .. .. .. ..	29,545	40,812
Alice Springs .. .. .. .. .. ..	7,351	4,270
Bendigo .. .. .. .. .. ..	66,316	65,656
Cairns .. .. .. .. .. ..	65,309	66,699
Canberra .. .. .. .. .. ..	125,632	125,632
Darwin .. .. .. .. .. ..	44,724	49,083
Hobart .. .. .. .. .. ..	52,430	52,920
Kalgoorlie .. .. .. .. .. ..	35,124	35,721
Launceston .. .. .. .. .. ..	41,280	48,500
Lismore .. .. .. .. .. ..	75,379	92,285
Port Pirie .. .. .. .. .. ..	10,854	12,638
Rockhampton .. .. .. .. .. ..	43,826	47,747
Tamworth .. .. .. .. .. ..	43,644	51,126
Toowoomba .. .. .. .. .. ..	105,816	108,831
Townsville .. .. .. .. .. ..	99,534	113,102

## WORLD HEALTH ORGANIZATION

### FOURTEENTH WORLD HEALTH ASSEMBLY

The Fourteenth World Health Assembly was staged at Vigyan Bhavan, New Delhi, between the 7th and 24th February, 1961. It was attended by Member States and Associate Members, representatives of the United Nations and its specialized agencies, observers for inter-governmental and non-governmental organizations in official relations with W.H.O. and observers from several non-member States.

The Australian delegation at the Assembly consisted of Major-General W. D. Refshauge, Director-General of Health, Dr. H. E. Downes, Assistant Director-General of Health and Mr. J. L. Allen, First Secretary, Australian High Commission, New Delhi.

**Malaria Eradication:** The outstanding achievement of the conference was the solution of the complex problem of the financing of the malaria eradication programme. This stemmed primarily from the extremely useful spade-work put in by a Working Committee of thirteen (including Australia), which persuaded the conference to agree in the first place to three basic principles: (i) should the financing of the malaria eradication programme be included in the regular budget? (Yes). (ii) Should this inclusion be phased? (Yes, over three years). (iii) Should there be any rebates for certain countries? (Yes).

Having secured agreement in principle to these three basic propositions (effective opposition to which was difficult), the question of their practical implementation presented no real difficulty, although naturally it took some time to work out the details. It was the adoption of this method of procedure (in which the Australian representative played a significant part in the Working Committee) that facilitated the solution of a problem that otherwise could easily have involved the conference in a morass of complicated details.

On the medical side, most delegates indicated that the malaria eradication programme was the most important world-wide public health measure in history.

**Smallpox Eradication:** Statistics indicate that smallpox eradication has made significant headway throughout the world. However, the incidence of smallpox in India and Pakistan, although reduced is still relatively high. The demand for calf-lymph continues.

**Tuberculosis:** The technical discussions on tuberculosis gave some hope for the controlling of the second most important disease in the under-privileged countries of the world.

**Programmes in Europe:** In the discussions on programmes in Europe, the problems of chronic diseases and geriatric diseases appeared to loom unduly large, particularly in the face of other much more urgent health problems in other parts of the world, such as bilharziasis, leprosy and blindness in Asia, the Middle East and especially in Africa.

### REGIONAL COMMITTEE FOR THE WESTERN PACIFIC

The Eleventh Session of the Regional Committee for the Western Pacific was held at Manila, from 12th to 17th August, 1960. The two Australian Representatives were Dr. H. E. Downes, Commonwealth Department of Health, Canberra and Mr. D. F. Ritchie, Australian Embassy, Manila.

The Committee deferred action until the Twelfth Session on an invitation made by the Government of Korea that the Thirteenth Session of the Committee should be held in Korea in 1962. It also reaffirmed its previous decision that the Twelfth Session should be held in New Zealand.

**Leprosy Control:** The Committee recommended that the W.H.O. should intensify its global public information and educational activities in the endeavour to change age-old attitudes to leprosy and gain acceptance of modern concepts.

**Malaria Eradication:** The Committee called on member governments, particularly those countries with a malaria problem, to contribute generously to the financing of the world-wide malaria eradication programme. It was forecast at this session that unless voluntary funds to support the Malaria Eradication Special Account were forthcoming, the malaria programme for eradication might have to be placed on the regular budget.

**Technical Discussions:** The subject, for the technical discussions was "The Organization and Administration of Rural Health Services". The subject was dealt with under two headings, namely "Planning and Assessment of Health Services" and "Organization and Administration".

Both topics were presented by a panel, after which there was an open discussion. Three discussion groups then considered the subject.

The Committee selected "Dental Health" for technical discussions in 1961.

**Seminar on Health Laboratory Services:** A Seminar on Health Laboratory Services was held in Manila from 5th to 16th December, 1960.

Laboratory experts from the following countries and Territories participated: Australia, China (Taiwan), Federation of Malaya, Fiji, Japan, Korea, New Zealand, North Borneo, the Philippines, Ryukyu Islands, Sarawak, Singapore, Territory of Papua and New Guinea, Viet Nam and Western Samoa. Dr. E. J. De Salis represented Australia.

## COMMONWEALTH GRANTS

### RED CROSS BLOOD TRANSFUSION SERVICE

Prior to 30th June, 1952, the cost of the Blood Transfusion Service conducted by the Australian Red Cross Society in all States, was borne by that Society with some assistance from the State Governments. In 1952, the Commonwealth agreed to make an amount of £50,000 available to the Society through the State Governments and a further grant of £44,000 was made available by the Commonwealth during the year ended 30th June, 1954. State assistance was to be continued at the previous level, with arrangements with the Society to share any deficit still remaining.

A further offer was made by the Commonwealth in March, 1954, of a grant to each State Government, equal to 30 per cent. of the certifiable operating costs of the Blood Transfusion Service incurred by the Society in each State. All States accepted the offer on the condition that 60 per cent. of the operating costs would be met by the State concerned, leaving 10 per cent. of the expense to be met by the Society, thus ensuring adequate maintenance of this important community service at a high level of efficiency.

Details of grants made by the Commonwealth during the period under review are included in the following table:—

State.	1960-61.					
	(Based on Expenditure for year ended 30th June, 1960.)					
New South Wales .. .. .. .. .. ..	£	41,800				
Victoria .. .. .. .. .. ..		49,994				
Queensland .. .. .. .. .. ..		28,182				
South Australia .. .. .. .. .. ..		17,535				
Western Australia .. .. .. .. .. ..		14,503				
Tasmania .. .. .. .. .. ..		5,520				
		157,534				

### ROYAL FLYING DOCTOR SERVICE

A further increase was made in the Commonwealth annual grant towards maintenance, made to the Royal Flying Doctor Service of Australia, from £20,000 to £25,000, with effect from 1st July, 1957. The Commonwealth grant towards capital expenditure by the Service remained at £15,000 per annum for the year under review. The capital expenditure grant is made on a £1-for-£1 basis in respect of approved projects.

The Commonwealth continues to meet the cost of the contents of standard medicine chests supplied for use in the various centres serviced by the Royal Flying Doctor Service when doctors give medical advice by radio.

### HOME NURSING SUBSIDY SCHEME

The annual subsidy paid by the Commonwealth since the inception of the Home Nursing Subsidy Scheme was—

1957 .. .. .. .. .. ..	£	1,807
1958 .. .. .. .. .. ..		18,135
1959 .. .. .. .. .. ..		34,538
1960 .. .. .. .. .. ..		53,616
1961 .. .. .. .. .. ..		78,014

Further details of this Scheme are included under the Nursing Section of this Report, on page 40.

## FREE MILK FOR SCHOOL CHILDREN

The *States Grants (Milk for School Children) Act 1950* makes provision for the Commonwealth to subsidize the States for the cost of providing free milk to school children. The State Governments administer this scheme and the Commonwealth reimburses the cost of the milk supplied, and half the cost of any incidental expenditure.

The subsidy for 1960-61 was £3,500,000 which permitted the free distribution of one-third of a pint of milk daily to approximately 1,600,000 school children attending public and private primary schools, kindergartens, creches, and aboriginal missions throughout Australia.

There have been no changes in legislation affecting the supply of free milk to school children during the year.

Total expenditure by the Commonwealth on the Free Milk Scheme since its commencement in 1950-51 is shown in Table I on page 16. However, these figures do not include amounts reimbursed to the States in respect of 50 per cent. of capital and incidental expenditure, which was £11,089 for 1960-61.

## MENTAL INSTITUTIONS

Earlier Commonwealth action in the field of mental health is summarized in the Report covering the period ended 30th June, 1956. As there recorded, the Commonwealth Government, in June, 1955, made an offer to the States of a grant of £10,000,000 for the purpose of encouraging a capital expenditure programme of £30,000,000. The offer was made on the basis of the provision of £1 by the Commonwealth for every £2 by the States. All the States accepted the offer made by the Commonwealth and agreed to the grant being divided on a population basis which resulted in the States being eligible for the following amounts:—

					£
New South Wales	..	..	..	..	3,830,000
Victoria	..	..	..	..	2,740,000
Queensland	..	..	..	..	1,460,000
South Australia	..	..	..	..	895,000
Western Australia	..	..	..	..	720,000
Tasmania	..	..	..	..	355,000
					10,000,000

In November, 1955, the Commonwealth Parliament passed the *States Grants (Mental Institutions) Act* which provided the necessary legislation for the above grants to be made available to the States. Expenditure must have the prior approval of the Minister for Health. The grant is paid to the States as a part reimbursement of their expenditure and therefore the amount of Commonwealth contribution, within the above totals, is dependent upon the capital expenditure made by the States in connexion with their mental hospitals.

Details of the expenditure by the States each year and the amount of Commonwealth grants paid to the States since the inception of the scheme are shown in Table XV on page 29.



